NetFRAME® LV2000

Server System User's Guide

MAS001523-00, 10/97

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Micron NetFRAME LV2000 User's Guide

Revision MED001161-MAN-00 10/97.

P/N MAS001523-00

CJG

Safety Information

The following instructions pertain to the risk of fire, electric shock, or bodily injury. Please read all of these instructions carefully.

1. Save these instructions for later use.

2. Follow all of the instructions and warnings marked on this product or included in this manual.

3. Do not use this product on an unstable cart, stand or table. The product may fall, causing serious damage to the product.

4. Slots and openings in the cabinet and the back are provided for ventilation. To ensure the reliable operation of your product, and to protect it from overheating, these openings must not be blocked or covered. Do not use this product on a bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register. This product should not be placed in a built-in installation unless proper ventilation is provided.

5. Never push objects of any kind into the product through the cabinet openings, as they may touch dangerous voltage points or short out parts that could result in fire or electric chock. Never spill liquid of any kind on the product.

6. This product should only be connected to the AC power source indicated on your product system's information label. If you are not sure of the type of AC power available, consult your dealer or local power company. Only connect this product to a power outlet that matches the power requirements of this product.

7. Do not allow anything to rest on the power cord. Do not locate this product where people may walk on the cord.

8. If you have to use an extension cord with this product, make sure that the total amperage rating of all equipment plugged into it does not exceed the amperage rating of the extension cord. Also, make sure that the total of all products plugged into the main AC power outlet does not exceed 15 amps.

9. Unplug your product from the main electrical power outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

10. Do not use this product near water.

11. Unplug this product from the main power outlet and call for service under any of the following conditions:

    A. If the power cord or plug is damaged or frayed.

    B. If liquid has been spilled into the product.

    C. If the product has been exposed to rain or water.

    D. If the product has been dropped or the cabinet has been damaged.

    E. If the product exhibits a distinct change in performance, indicating a need for service.

Power Supply Warning

Do not open the power supply cover as hazardous voltages may be present. There are no serviceable components inside.

Battery Warning

Caution

There is danger of explosion if the battery is replaced incorrectly. Replace only with the same or equipment type recommended by the manufacture. Discard used batteries according to the manufacturer's instructions.

Attention

II y a danger d'explosion s'il y a remplacement incorrect de la batterie. Remplacer uniquement avec une batterie de meme type ou d'un type recommande par le constucteur. Mettre au rebutled batteries' usagees conformement aux instructions du fablicant.

Vorsicht

Explosionsgefahr bei unsachgemaB em Austausch der Batterie. Ersatz nur durch denselben oder einen vom Hersteller empfohlenen ahnlichen Typ. Entsorgung gebraushter Batterien nach Angaben des Herstellers.

Ergonomic Notice

Now that you have your Micron computer, you will probably spend many hours exploring the capabilities of this machine, and personalizing it for your use. But the computer is only part of the larger picture of ergonomics. Ergonomics is a science that addresses human performance and well-being in relation to various types of jobs, tools, equipment and environment.

As you begin to personalize your working environment, it is important to keep in mind your body's needs to make your computer time more productive with less physical and mental stress. And an effective work area will begin from the ground up. Here are some suggestions:

- Use an adjustable chair, and try different seated postures to find what is most comfortable and produces the least fatigue. The backrest should be adjustable to fit the small of your back.

- Use an adjustable keyboard support. You want to keep your wrists straight, your hands lower than your forearms and your forearms parallel to the floor. Use a light touch on the keyboard.

- Alternate mouse and keyboard use, and keep the mouse within easy reach.

- Place the monitor 18-30 inches from your eyes (arm's length is also a good distance). The top of the monitor should be level with your eyes.

- Take breaks from both the keyboard and looking at the monitor. Performing simple exercises while at your work area will increase your productivity. Shrug your shoulders…take a deep breath...change your focus...massage your hands...stretch....let your arms fall relaxed at your sides.

No two work areas will ever be the same. Find the combinations that work for you, and keep in mind that proper work area planning will make your computer time more effective, and less stressful on your body.

FCC Information

Class B Digital Device: This device complies with Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult an experienced radio/TV technician for help.

Note: Shielded interface cables must be used in order to comply with the emission limits.

Caution: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authorization to operate the equipment.

COMPLIANCE INFORMATION STATEMENT

DECLARATION OF CONFORMITY

Responsible Party:	Micron Electronics, Inc.
Address:	900 E. Karcher Road Nampa, Idaho 83687 USA
Telephone:	(208) 463-3434
FAX:	(208) 463-3424
Type of Equipment:	ATX Tower Server
Model Name:	R440LX

This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions:

1) this device may not cause harmful interference, and

2) this device must accept any interference received including interference that may cause undesired operation.

DECLARATION OF CONFORMITY

APPLICATION OF COUNCIL DIRECTIVE(S) 89/336/EEC and 72/23/EEC
Standard(s) to which Conformity is Declared:

EN55022
EN50082-1
EN60950

Manufacturer's Name: Micron Electronics, Inc.

Manufacturer's Address: 900 E. Karcher Road
Nampa, Idaho 83687
USA

Micron Electronics, Inc., hereby declares Micron systems bearing the CE marking are in compliance with the EMC (Electromagnetic Compatibility) directive of the European Community and conform to the Directive(s) and Standard(s) listed above.

A "Declaration of Conformity" for each system can be found on file at any authorized European Micron Dealer/Distributor. For a list of authorized dealers/distributors, please contact Micron Electronics, Inc. at 208-893-8970. When requesting a "Declaration of Conformity," please refer to the FCC ID number on the system label.

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Chapter 1

Setting Up Your System

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Unpacking

Check the Packaging

As soon as the packages containing your new system arrive, carefully inspect them for any signs of damage. In particular, look for wrinkled or bent corners, holes, or other signs of bad handling or abuse. If you notice any damage to the packaging, immediately open the boxes and inspect the contents for damage. Pay close attention to the components near the area where the packing material was damaged.

Unpack Your System

Caution: If your system arrives in cold weather, do not unpack the computer or the monitor until they have been allowed to come to room temperature. Immediately exposing them to the warm room may cause condensation to occur, which may damage the units. If condensation does occur, allow the units to completely dry before operating them.

Follow these steps after you have determined that the packaging is undamaged:

1. Taking care not to damage the packing material, carefully open the cardboard box containing the computer and remove the system unit, keyboard and any other accessories that you may have ordered.

2. Carefully unpack the monitor and all accessories from the monitor package. Be careful not to damage the packing material.

3. Inspect all items for damage that may have occurred during shipment.
   For your protection, report any damage to the shipper immediately.

We highly recommend that you save the packaging in the event that you need to move or ship the system some time in the future.

Check Your Packing List

Now that you have everything out of the packages, take the time to check the packing list to be sure you received everything. If you discover that an item is missing, call Micron Electronics, Inc. immediately to receive a replacement. Refer to Appendix A for contact information.

Setup

Getting Started

Before your new system left the factory, Micron configured the hardware. The display adapter was set to work with your monitor and the hard disk was partitioned and formatted with DOS using the standard default settings for your machine. Your computer system is ready to go. All you have to do is plug it in.

What You Need

- ❑ A grounded power outlet
- ❑ Phillips-head screwdriver
- ❑ Power filter / suppressor protector (recommended)

Putting It All Together

To complete your setup, refer to the following steps:

1. Take a moment and review the case figures on the following pages to acquaint yourself with the front and back of your system.

2. Check the voltage selector on the rear of the unit. Be sure it is switched for the proper voltage (115V in the United States and Canada).

3. Place the monitor where you wish, as long as its cable can still reach the video connector at the rear of the computer.

4. Unpack the power cable for the computer and plug the appropriate end into the power inlet at the back of the system. Insert the other end into a grounded power outlet. We highly recommend that you obtain a protection device such as an uninterruptable power supply (UPS), power filter or surge suppressor. In this way you will be providing the utmost protection for your system and data.

5. ***Ensure that the system is turned OFF before proceeding. Attaching peripherals while the power is on may damage the unit or the peripheral.***

6. Locate the monitor's power cable and plug the appropriate end into the monitor (if not already attached). Insert the other end into the grounded outlet or protection device.

7. Find the video cable and attach the appropriate end into the monitor (if not already attached) and attach the other end into the video connector (located in one of the expansion slots at the rear of the unit). If the connection is loose on either end, tighten the integrated screws at both ends of the cable for a secure connection. For more information about the setup, use, and maintenance of your video monitor, please refer to the manual that was supplied with it.

8. Insert the ends of the keyboard and mouse cables into the keyboard and mouse connectors at the rear of the computer system. Take care, for the connectors are keyed in such a way that the plugs can only be inserted if oriented correctly. Refer to the case drawings on the following pages for the location of the proper connector. ***If it does not plug in easily, do not force it.***

Your system should now be ready to use. You may have other devices or peripherals to install, but it is best to ensure the basic system is operating correctly before adding any options.

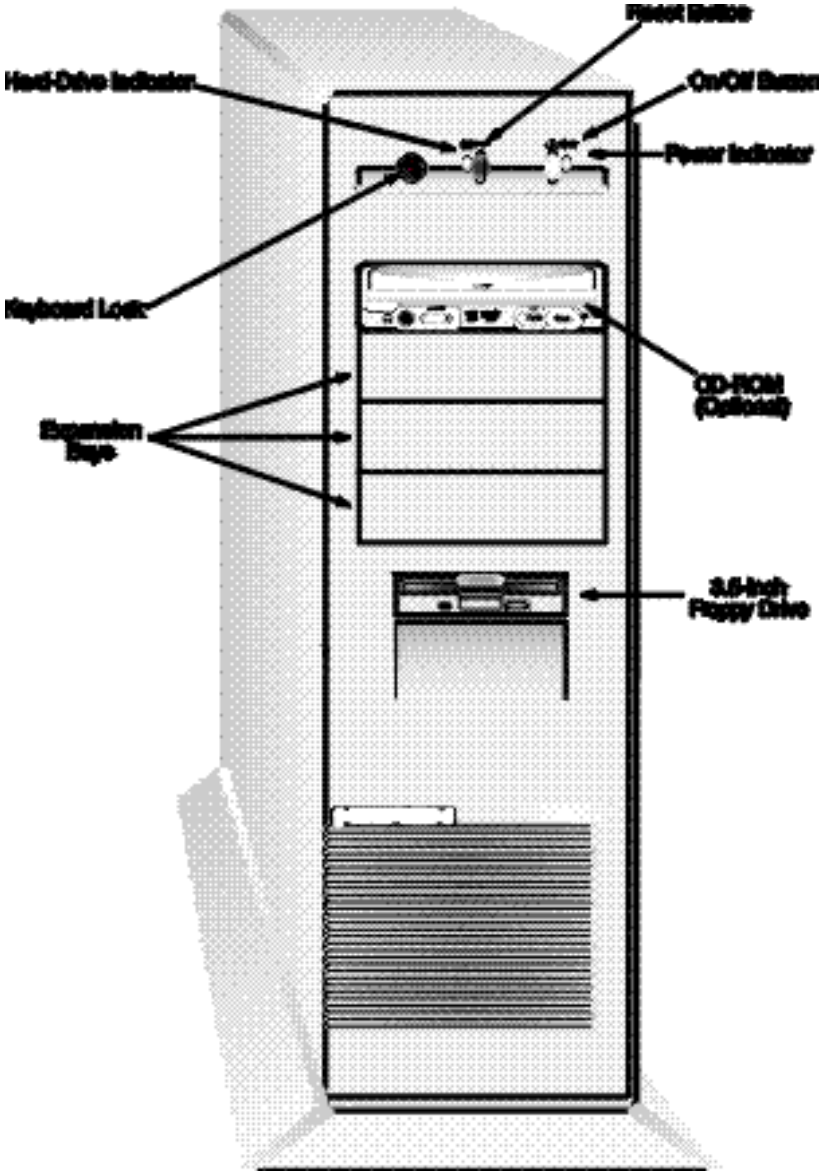

Figure 1-5. Tower Case-Front

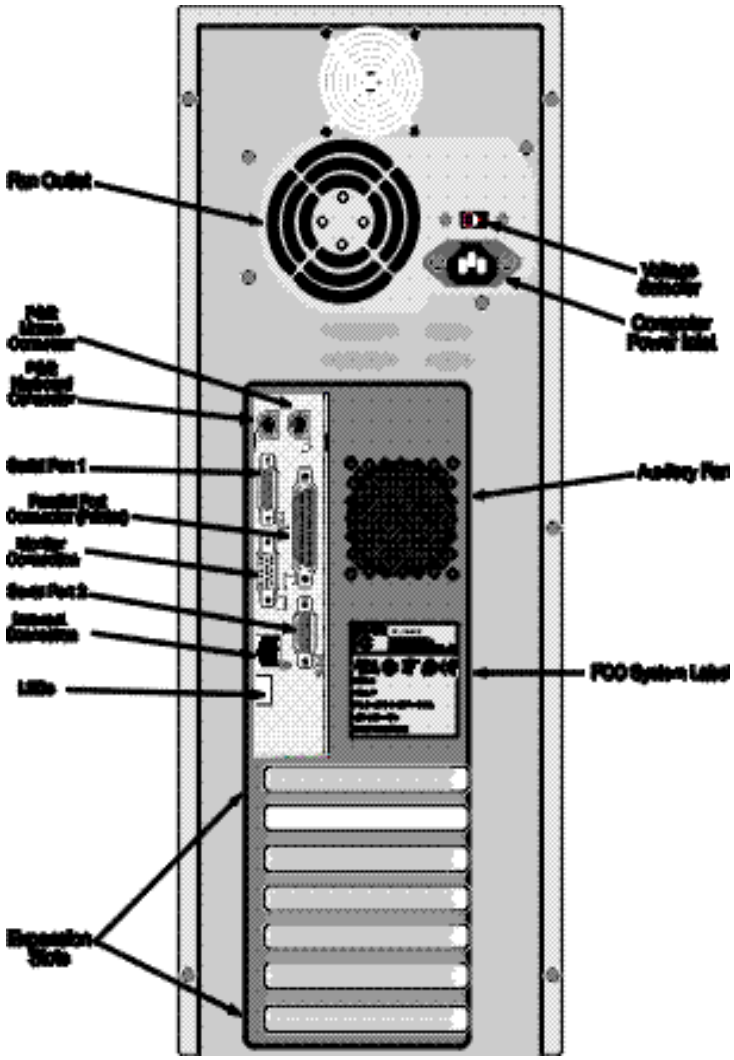

Figure 1-6. Tower Case-Rear

Running Your System for the First Time

1. Power up the monitor. If you are unsure about this, please refer to the monitor's manual for more information.

2. Remove any floppy disks from the floppy drive.

3. Power up the computer system by firmly pushing and releasing the On / Off button on the front panel of the system. The power indicator should light up and the fan and hard drive should begin to run.

The system diagnostics begins at this time. The keyboard is initialized indicated by the keyboard LEDs blinking momentarily. The Num Lock LED remains on. Next, the screen initializes and a message indicating what type of video adapter is installed**.** The memory will be counted and tested.

Finally, the system is booted.

If you experience any problems during the power up sequence, please refer to Chapter 4, "Common Problems."

Turning Off Your System

Micron recommends that you power down your system in the following order:

1. Exit all applications you are running and save any changes.

2. Make sure that ALL disk activity has completely stopped. The floppy and hard drive indicator lights should be off and the floppy drive motors should stop. Hard disks continue to spin until the system power is shut off.

3. Turn off the computer system, then the monitor.

Maintenance

Operating Environment

Your Micron computer has been manufactured to the highest standards. With proper care, it should provide years of trouble-free service.

To ensure that your system has the longest life possible, it should be placed in an area with good ventilation and low humidity, out of direct sunlight and away from heat sources or lamps. Be sure the rear cooling-fan opening is not obstructed as it is necessary to keep the system cool. Never expose the system to any moisture. This could lead to fire or shock hazard. Stay away from areas with high levels of dust, dirt, or smoke.

Transporting

Always shut the system off before moving it. Any sudden jar or shock may permanently damage the hard drive. Hard drives are more resistant to shock if they are shut down.

If you are transporting the system over a distance, it is a good idea to completely repackage it in its original packing material. If the original packaging is unavailable, pack all components with as much padding as reasonably possible to ensure that the units are not exposed to excessive vibration or shock.

Cleaning

If the case becomes dirty through constant use or handling, use only a damp, dust-free cloth for cleaning. Do not use abrasives or solvents as these may mar or scratch the case. Window cleaner and a cloth can be used to clean the monitor, if the monitor has been turned OFF first. Never apply the window cleaner directly to the monitor screen. Always spray the cloth first, then wipe down the screen.

Cleaning kits designed to clean floppy drives are available from most computer stores and should be used periodically.

If you are operating your system in an environment heavy with smoke or dust, you should occasionally open the unit and *with great care*, clean the components with a vacuum (special vacuums are available just for this purpose). Be careful to not loosen any of the components.

If liquid is spilled into the keyboard, immediately unplug it, allow the fluid to drain out by tipping the keyboard upside down, and dry the keyboard overnight before using it again.

Protecting

To prevent normal electrical problems such as spikes or surges, install a power surge/filter between the power outlet and *all* of the connected components. If even one component is not connected, the entire system could be at risk.

If a severe storm enters your area, completely unplug the entire system from all electrical sources, including phone lines. Lightning can travel in on any line and destroy all connected components.

If possible, do not turn the system on and off frequently. This stresses the power supply and may shorten the life of some components. To restart the system, press the reset button located in the front of the case. If applications are open and the system is reset or if the hard drive is active, data loss will most certainly occur. If you do not use the reset button to restart the system, be sure the hard drive has come to a complete stop before turning the computer on again.

Backing Up

Even with today's technology, data loss can occur at any time. We highly recommend that you back-up often. There are a large number of backup systems available from retail and mail-order outlets, including floppy drive backup systems, tape backup systems, and optical backup systems. Any of these alternatives are highly recommended. Complete, frequent backups can save years of data from total and irretrievable destruction. If you require additional information about backup systems or options, please contact Micron Electronics, Inc.

Removing the System Cover

Refer to the Figure on page 1-13. Use a #2 Phillips-head screwdriver or a 1/4" hex driver.

1. It is not necessary to disconnect the cable connectors on the back of the computer before opening the cover. However, note where the cables connect to the back for future reference . (If you have a video camera, a quick scan of the rear case is helpful).

2. Remove the screws from the back of the case cover. Keep these screws together (they are a different size than the other screws in your system) for they are not to be interchanged.

3. With flat palms placed on each side of the cover, pull the cover back until the cover's front top lip clears the chassis channel (about 3/4"). Grasp the top-rear of the cover and lift up in one smooth motion until the cover clears the chassis.

To replace the cover, gently lower the top lip of the cover into the chassis channel at an angle before lowering the rear into place. With the lip inserted in the channel, push the rear of the cover forward to seat it flush and replace the screws. Note the metal rail guides located inside the bottom of the cover which must fit over the bottom metal case frame when the cover is replaced.

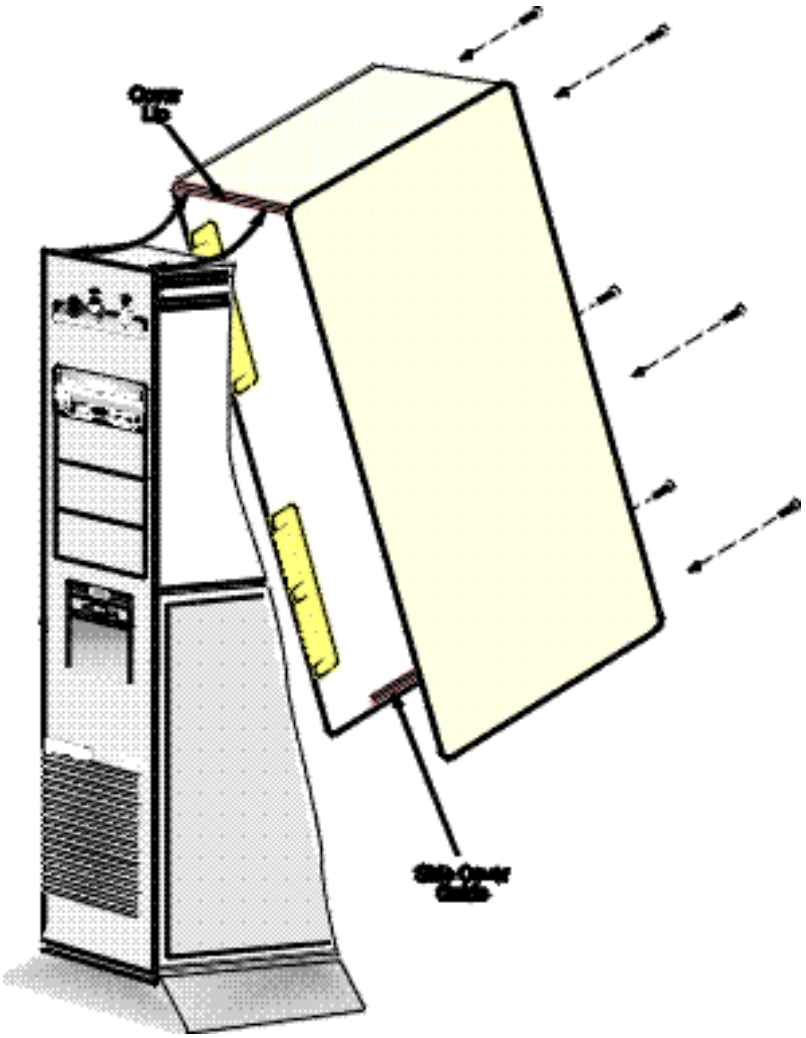

Figure 1-7. System Cover Removal

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Overview

Micron's NetFRAME LV2000 features a high-performance system board designed to be the basis for your server system. The NetFRAME LV2000 is based on Intel's 440LX chipset and the Pentium II processor..

System Features

- ATX form factor.
- Supports up to two Pentium II processors.
- Four 72-bit sockets for SDRAM dual inline memory modules (DIMM), 32 to 512 MB.
- 512 KB of flash ROM.
- One ISA and four PCI expansion slots.
- Integrated onboard Cirrus Logic CL-GD5446 super video graphics array (SVGA) controller; 1 MB video memory.
- Adaptec AIC-7880 Wide, Fast-20, PCI 2.1-compliant SCSI controller.
- Integrated onboard NIC. Intel 82557 PCI LAN controller for 10 or 100 Mbps TX Fast Ethernet networks. RJ45 Ethernet connector and indicator LEDs at I/O back panel.

System Board

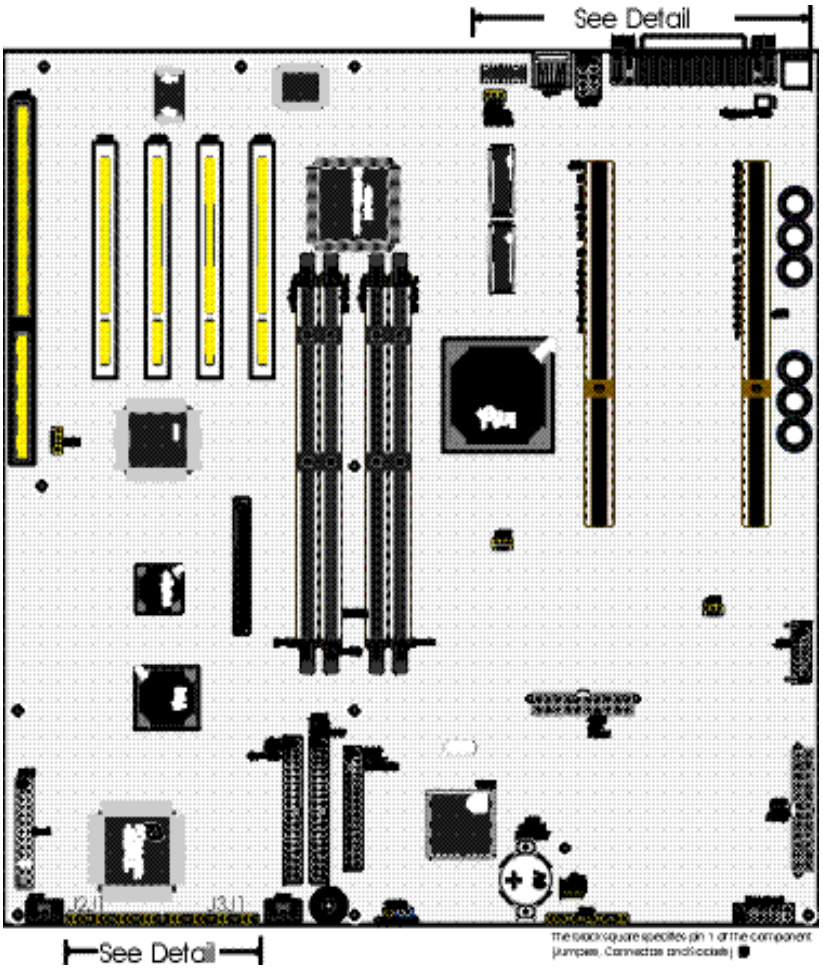

Figure 2-1. NetFRAME LV2000 System Board

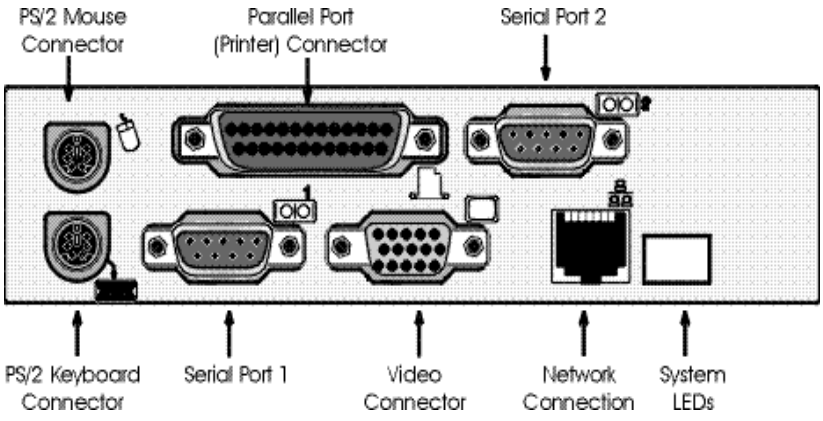

Figure 2-2. Back Panel Connector Layout

Jumper Settings

Configuration

The jumpers on the Micron NetFRAME LV2000 are preset at the factory and in most cases do not need to be changed. However, if certain functions need to be changed, the jumpers may need to be reconfigured. The following figure shows an example of a jumper.

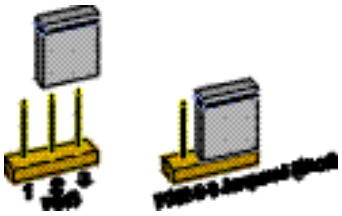

Figure 2-3. Example of a Jumper and Jumper Block

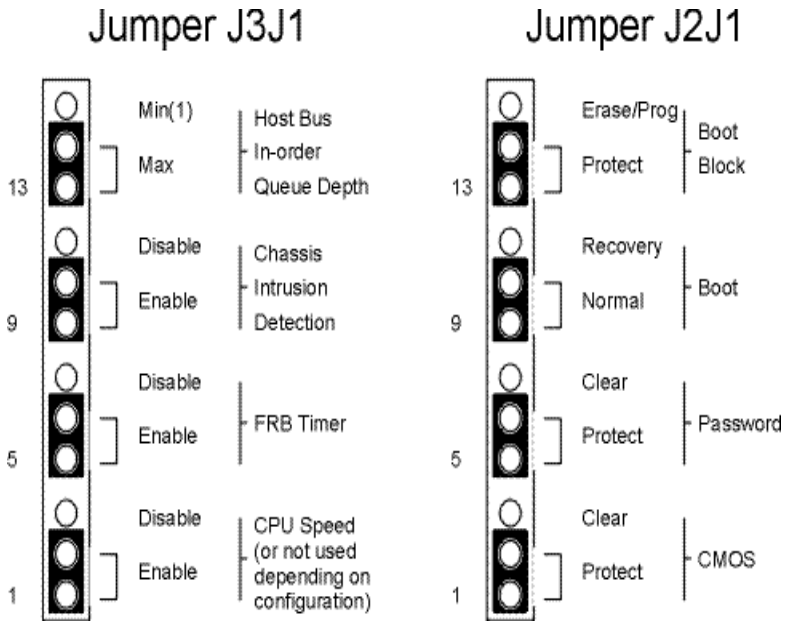

Figure 2-4. Jumpers J3J1 and J2J1

General Procedure to Change Jumper Setting

The short general procedure described here for changing a configuration setting is the same for most of the jumper functions.

1. Observe the safety precautions at the beginning of this manual.
2. Turn off all connected peripherals, turn off system power, and disconnect the AC power cord.
3. Remove the cover. You do not need to remove the system board from the chassis, and you probably do not need to remove any add-in boards.
4. Locate the configuration jumpers at the edge of the system board toward the front of the system.
5. Move jumper to pins specified for the desired setting.
6. Reinstall the cover, connect the power cord, and turn on the system for the change to take effect.

You may need to repeat these steps to move the jumper back to its original setting, depending on the jumper function.

Function Pins (default in bold)

What it does at system reset:

CMOS clear	**1-2, Protect**	Preserves the contents of NVRAM.
	2-3, Erase	Replaces the contents of NVRAM with the manufacturing default settings.
Password clear	**5-6, Protect**	Maintains the current system password
	6-7, Erase	Clears the password.
Recovery Boot	**9-10, Normal**	System attempts to boot using the BIOS stored in flash memory.
	10-11, Recovery	BIOS attempts a recovery boot, loading BIOS code from a floppy diskette into the flash device. This is typically used when the BIOS code has been corrupted.
Boot Block Write Protect		
	13-14, Protect	BIOS boot block is write-protected.
	14-15, Program	BIOS boot block is erasable and programmable.

CAUTION

Programming the boot block incorrectly will prevent the system from booting.

CPU Speed	**1-2, Protect**	Processor speed configuration is protected.
	2-3, Enable	Processor speed configuration is enabled.

Note

Depending on your configuration, this jumper is either available to set the speed of the processor, or not available at all.

FRB Timer Enable	**5-6, Enable**	FRB operation is enabled (system boots from processor 1 if processor 0 fails).
	6-7, Disable	FRB is disabled.
Chassis Intrusion Detection		
	9-10, Enable	Switch installed on chassis indicates when cover has been removed.
	10-11, Disable	Chassis intrusion switch is bypassed.
Host Bus In-order Queue		
	13-14, Max	Host in-order queue depth is set at maximum.
	14-15, Min (1)	Host in-order queue depth is set at 1 (used for debugging).

CMOS Jumper

The jumper at pins 1, 2, and 3 controls whether settings stored in CMOS nonvolatile memory (NVRAM) are retained during a system reset.

Procedure to restore the system's CMOS and RTC to default values:

1. See "General Procedure to Change Jumper Setting" on page 2-6.
2. Move the CMOS jumper from pins 1 and 2 to pins 2 and 3 (the Clear CMOS memory position).
3. Reinstall the side cover for your safety, and connect the power cord to the system.
4. Turn the system on. Wait for POST to complete and for the messages "NVRAM cleared by jumper" and "Press F2 to enter Setup" to appear. This automatically reprograms CMOS and RTC to their default settings.
5. Enter Setup and make any changes necessary (for example, changing the boot device). Press F10 to save the new Setup configuration and exit Setup.
6. Turn off the system, and disconnect the power cord from the system.
7. Again remove the side cover.
8. Move the jumper from pins 2 and 3 back to pins 1 and 2 (the Protect CMOS memory position).
9. Reinstall the side cover, and connect the power cord to the system.
10. Run BIOS Setup or the SCU to verify the correct settings. See Chapter 3.

Password Jumper

The jumper at pins 5, 6, and 7 controls whether a stored password is retained or cleared during a system reset.

Procedure to clear the current password and then enter a new one:

1. See "General Procedure to Change Jumper Setting" on page 2-6.
2. Move the Password jumper from pins 5 and 6 to pins 6 and 7.
3. Reinstall the side cover for your safety, and connect the power cord to the system.
4. Turn the system on, and wait for POST to complete. This automatically clears the password.
5. Turn off the system, and disconnect the power cord.
6. Again remove the side cover.
7. Move the jumper from pins 6 and 7 back to pins 5 and 6.
8. Reinstall the side cover, and connect the power cord to the system.
9. Run the SCU to specify a new password. See Chapter 3.

Recovery Boot Jumper

The jumper at pins 9, 10, and 11 controls whether the system attempts to boot using the BIOS programmed in Flash memory.

Procedure to disable recovery booting:

1. See "General Procedure to Change Jumper Setting" on page 2-6.
2. Move the recovery boot jumper from pins 9 and 10 to pins 10 and 11.

3. Reinstall the side cover for your safety, connect the power cord to the system.
4. Turn the system on, and insert the Flash Memory Update Utility diskette in drive A. After the system boots, the speaker emits a single beep and the recovery process starts. This takes about three minutes. When the recovery process completes, the speaker emits two beeps.

While in the recovery mode, there is no screen display on the monitor. The keyboard is disabled as the system automatically recovers the BIOS. The following beep codes describe the recovery status.

Beep Code	Message
2	Successful completion, no errors.
4	The system could not boot from the diskette. The diskette may not be bootable.
Continuous beeps	The wrong BIOS recovery files are being used and/or the flash memory jumper is in the wrong position.

5. Turn the system off, disconnect the power cord(s) from the system, and remove the left side cover.
6. Move the jumper from pins 9 and 10 to pins 10 and 11 to enable the normal boot mode.
7. Replace the left side cover, remove the diskette from drive A, and connect the power cord(s) to the system.
8. After running the special recovery mode, run the SCU to specify a new password. See Chapter 3.

Boot Block Write Protect Jumper

The jumper at pins 13, 14, and 15 controls whether the BIOS boot block is protected from being erased and reprogrammed.

CAUTION, leave boot block jumper at factory-default setting
Programming the boot block incorrectly will prevent the system from booting. Programming *should only be done* by a technically qualified person. The procedure requires a special "Boot Block Update Utility." Contact your dealer or sales representative for more information.

Procedure to permit boot block erasing and programming:

1. See "General Procedure to Change Jumper Setting" on page 2-6.
2. Move the boot block jumper from pins 13 and 14 to pins 14 and 15 to erase and program the BIOS boot block.
3. Reinstall the side cover for your safety, and connect the power cord to the system.
4. Run the Boot Block Update Utility.
5. Turn off the system, and disconnect the power cord from the system.
6. Remove the side cover.
7. Move the jumper from pins 14 and 15 back to pins 13 and 14 to write protect the BIOS boot block.
8. Reinstall the side cover, and connect the power cord to the system.

CPU Speed Jumper

The jumper at pins 1, 2, and 3 controls whether you can configure the speed of the processor.

Note
Depending on your configuration, this jumper is either available to set the speed of the processor, or not available at all. If available, enabling this jumper will activate the CPU Speed Setting field in the Main Menu of the BIOS Setup Utility. See Chapter 3.

Procedure to enable processor speed configuration:

1. See "General Procedure to Change Jumper Setting" on page 2-6.
2. Move the processor speed jumper from pins 1 and 2 to pins 2 and 3. This activates the CPU Speed Setting field in the BIOS Setup Utility.
3. Reinstall the side cover for your safety, and connect the power cord to the system.
4. Run the BIOS Setup Utility as described in Chapter 3.
5. Select the proper speed for your processor.
6. Again remove the side cover.
7. Move the processor speed jumper from pins 2-3 back to pins 1-2.
8. Reinstall the side cover for your safety, and connect the power cord to the system.

FRB Timer Enable Jumper

The jumper at pins 5, 6, and 7 controls whether the system boots from processor 1 if processor 0 fails.

Procedure to disable FRB timer:

1. See "General Procedure to Change Jumper Setting" on page 2-6.
2. Move the recovery boot jumper from pins 5 and 6 to pins 6 and 7.
3. Reinstall the side cover for your safety, and connect the power cord to the system.
4. Turn the system on, and wait for POST to comlpete.
5. Run the SCU to configure the system. See Chapter 3.

Chassis Intrusion Detection Jumper

The chassis contains an alarm switch that sends a notification signal to the server management software if a cover is removed. The jumper at pins 9, 10, and 11 controls whether this alarm feature is enabled or disabled.

Procedure to disable (bypass) the chassis intrusion switch:

1. See "General Procedure to Change Jumper Setting" on page 2-6.
2. Move the chassis intrusion detection jumper from pins 9 and 10 to pins 10 and 11 to disable the alarm switch.
3. Reinstall the side cover for your safety, and connect the power cord to the system.
4. Turn the system on, and wait for POST to complete.
5. Run the SCU to configure the system. See Chapter 3.

To enable the intrusion switch, do the above steps but move the jumper back to pins 9 and 10.

Host Bus In-order Queue Jumper

The jumper at pins 13, 14, and 15 controls whether the host bus in-order queue is set at maximum or minimum (one).

Procedure to change setting of the host bus in-order queue from maximum to minimum (one):

1. See "General Procedure to Change Jumper Setting" on page 2-6.
2. Move the chassis intrusion detection jumper from pins 13 and 14 to pins 14 and 15 to disable the alarm switch.
3. Reinstall the side cover for your safety, and connect the power cord to the system.
4. Turn the system on, and wait for POST to complete.
5. Run the SCU to configure the system. See Chapter 3.

To change the setting to maximum, do the above steps but move the jumper back to pins 13 and 14.

Installing Add-On Peripherals

The NetFRAME LV2000 accommodates ISA and PCI Local Bus cards. Extra SDRAM can also be added to the system board. The following describes how to install the PCI card and SDRAM memory.

PCI Local Bus Card

PCI Local Bus slots accommodate most PCI-approved Local Bus cards. To install a PCI Local Bus card:

1. Power OFF the computer system.
2. Locate an unused PCI slot on the system board.
3. Insert the card with the bottom edge level. Never insert the card at an angle.
4. Holding the card at the center of the top edge, gently push straight in. Do not force the card into place. If it does not fit, take it out and try again.
5. Make sure the card is fully inserted.
6. Secure the card with a bracket screw.

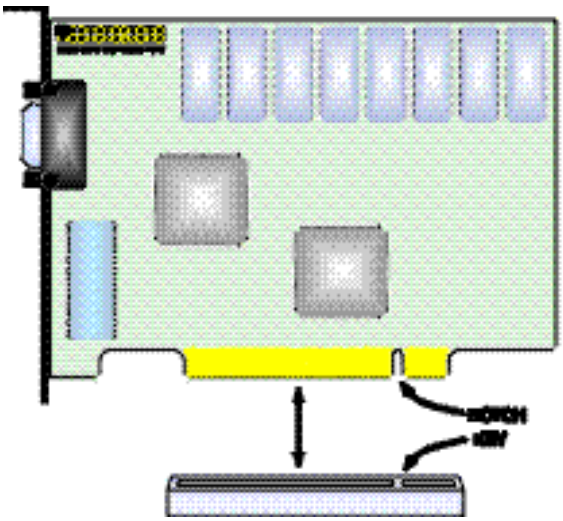

Figure 2-5. Installing a PCI Local Bus Card

Add-in Board Slots

The system board has one full-length dedicated ISA bus slot, which can have a bus master in it. ISA features:

- ❑ Bus speed up to 8.33 MHz
- ❑ 16-bit memory addressing
- ❑ Type A transfers at 5.33 Mbps
- ❑ Type B transfers at 8 Mbps
- ❑ 8- or 16-bit data transfers
- ❑ Plug and Play ready

The system board also has four dedicated full-length PCI slots. PCI features:

- ❑ Bus speed up to 33 MHz
- ❑ 32-bit memory addressing
- ❑ 5 V signaling environment
- ❑ Burst transfers of up to 133 Mbps
- ❑ 8-, 16-, or 32-bit data transfers
- ❑ Plug and Play ready
- ❑ Parity enabled

Memory

Only SDRAM is supported by the system board. Memory is partitioned as four banks of SDRAM DIMMs, each providing 72 bits of noninterleaved memory (64-bit main memory plus ECC):

- ❑ Install from 32 MB to 512MB of memory, using up to four double-banked DIMMs.
- ❑ Install from 32 MB to 512 MB of memory, using up to four single-banked DIMMs.

DIMM sizes and compatibility

We do not test every possible combination of DIMM sizes and vendors. To avoid potential memory problems, use DIMMs that have been tested for compatibility with the system board. The table below lists some sample size combinations. Contact your sales representative or dealer for more information about your system.

Sample DIMM Component Combinations

Bank 0 (slot J1)	Bank 1 (slot J2)	Bank 2 (slot J3)	Bank 3 (slot J4)	Total memory
32				32 MB
32	32			64 MB
32	32	128		192 MB
32	32	128	128	320 MB
32	128	128	128	416 MB
128	128	128	128	512 MB

- ❑ Questions and purchases for memory expansion may be directed to Micron Memory Module sales (1-800-438-3343).

DIMM Modules

The memory in this system can be increased up to a maximum of 512MB by installing DIMMs (dual in-line memory modules). To install DIMMs, first locate the memory banks on the system board (refer to Figure 2-1). Follow the table on page 2-14 for the possible installation combinations.

CAUTION: Modules are Electrostatic Sensitive.

Even a small electrostatic discharge could damage the module. A damaged module might not fail immediately, but over time it will become worse, possibly causing an "intermittent" problem. Be very careful to handle the boards ONLY by the edges. DO NOT touch the gold/silver edge-connectors or any of the components on the board. Leave the module in the antistatic bag until ready for installation.

1. Switch the computer off. Leave the computer plugged in to the outlet to provide an electrical ground to discharge static electricity.

2. Touch the metal case of the power supply or the metal lining inside the computer case. This will drain the static charge from your body and will keep the modules from being electrically damaged.

3. Keep body movement to a minimum as you remove and handle the modules. Antistatic wrist straps with clip-on ends are commercially available.

Installing DIMM Modules

The NetFRAME LV2000 has four, 72-pin DIMM sockets on-board and can accommodate ECC or non-ECC SDRAM memory from 32MB up to 512MB using the DIMM combinations on page 2-14.

There are no jumper settings required for the memory size or type, which is automatically detected by the system BIOS. Gold leaded DIMMs are required to be used when adding system memory.

Step 1: Using both hands, carefully set the DIMM into the center of the left and right latching levers. Center the module over the socket so that the notches are aligned with the socket keys. Do not force it in or damage may result. Note that the DIMM modules are keyed in such a way that they cannot be inserted incorrectly (refer to the figure below). If you are having difficulty placing them into the socket, check to see that you are not attempting to insert them backwards.
Do not lock the module into position at this time.

Step 2: Check to make sure the module is centered in the socket, and that the connector pins of the module line up with the socket connector pins.

A) Be sure the module is centered and connector pins are aligned.

B) When the module is locked in place, be sure both latching levers are fully seated into latching notches in the sides of the DIMMs.

Step 3: Using both hands and applying equal pressure on each end of the module, lock the module into the socket by pushing downward with the thumbs and squeezing inward with the forefingers. Make sure both latching levers have seated fully into the modules latching notch. The module should now be standing upright in the socket. Refer to the fully seated drawing on the following page.

WARNING: Failure to observe proper insertion guidelines may result in damage to the DIMM and/or the socket.

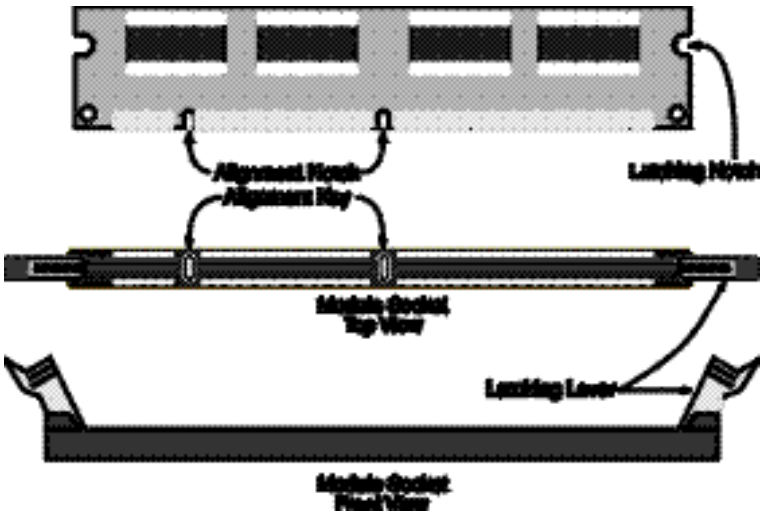

Figure 2-6. Proper DIMM Insertion

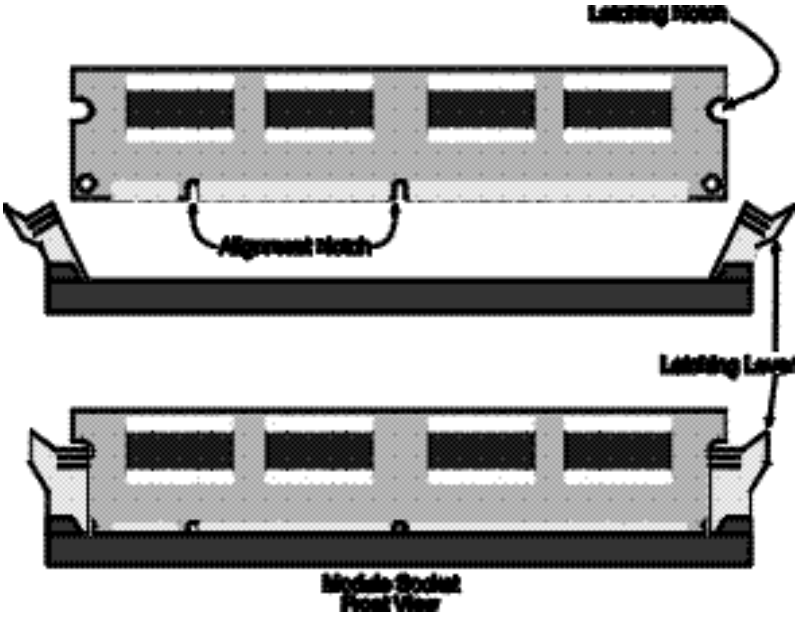

Figure 2-7. DIMM Fully Seated

Removing DIMM Modules

To remove DIMM modules, simply reverse the installation procedure with the following differences. Using the thumbs of both hands, gently pry the latching levers open so they no longer hold the module in the socket. Gently lift the module upward to clear the latching levers.

Chapter 3

Configuring the System

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SETUP

BIOS Setup

Every AT-compatible computer has a battery supported CMOS memory location that stores information about the system and peripheral configuration. Because of the attached battery, the CMOS is constantly provided with power, even when the computer has been turned off.

During the boot sequence, a special software application called the BIOS (Basic Input Output System), located in read-only (ROM) memory on the system board, reads the information contained in the CMOS and configures the CPU and other peripheral devices. If the CMOS information is incorrect, the system may not operate correctly until accurate information is stored in the CMOS. The Setup Program has been built into the system to provide the means for changing the CMOS.

When Setup Should Be Run

Although the Micron NetFRAME LV2000 arrives fully configured, the system may need to be adjusted to fit your needs.

Whenever peripherals are added or removed from the system (for example, if you add a hard disk or more memory), you must run Setup to inform the system about the new configuration.

If the information in CMOS is lost, the system will not operate properly unless Setup is used to restore the system configuration.

Power-on Self Test (POST)

Each time you turn on the system, POST starts running. POST checks the system board, processor, memory, keyboard, and most installed peripheral devices. During the memory test, POST displays the amount of memory that it is able to access and test. The length of time needed to test memory depends on the amount of memory installed. POST is stored in flash memory.

1. Turn on your video monitor and system. After a few seconds POST begins to run.

2. After the memory test, these screen prompts and messages appear:
   Press <F2> key if you want to run SETUP
   Keyboard.....Detected
   Mouse.....Detected

3. If you do not press <F2> and do NOT have a device with an operating system loaded, the above message remains for a few seconds while the boot process continues, and the system beeps once. Then this message appears:
   Insert bootable media in the appropriate drive
   If you do not press <F2> and DO have an operating system loaded, the boot process continues, and this message appears:
   Press <Ctrl><A> for SCSISelect(TM) Utility!

4. Press <Ctrl+A> if there are SCSI devices installed. When the utility opens, follow the displayed instructions to configure the onboard Adaptec AIC-7880 *Ultra-wide* SCSI host adapter settings and to run the SCSI utilities.

   If you choose not to press <Ctrl><A> (SCSI*Select* Utility), the boot process continues. After POST completes, the system beeps once.

What appears on the screen after this depends on whether you have an operating system loaded and if so, which one.

If the system halts before POST completes running, it emits a beep code indicating a fatal system error that requires immediate attention. If POST can display a message on the video display screen, it causes the speaker to beep twice as the message appears.

Note the screen display and write down the beep code you hear; this information is useful for your service representative. For a listing of beep codes and error messages that POST can generate, see the “Solving Problems” chapter in this manual.

Using the System Configuration Utility (SCU)

The System Configuration Utility (SCU) is the main tool to configure the system or to check or change the configuration. Many system settings can be entered from either the SCU or Setup, but the SCU provides conflict resolution as well as access to information about ISA, ISA Plug and Play, and PCI adapters. The SCU is PCI-aware, and it complies with the ISA Plug and Play specifications. The SCU works with any compliant configuration (.CFG) or overlay (.OVL) files supplied by a peripheral device manufacturer.

System must have a diskette drive

The system must have a diskette drive present and enabled to use the SCU. If a diskette drive is present but is disabled or misconfigured, use the BIOS Setup utility to enable or configure the drive.

Where the SCU Gets Information

Source	Description
Configuration (.CFG) and overlay (.OVL) files	For the system board, we provide a .CFG file and an .OVL file with the SCU. These files describe the board's characteristics and the system resources required. Some ISA adapters come with a diskette that contains a .CFG file (and an optional .OVL file).
Configuration registers	Information and required resources for PCI and Plug and Play adapters are derived from the adapter's configuration registers.
User selected options	The SCU displays the exact system configuration and the user's current settings by reading ISA CMOS and system nonvolatile storage (NVRAM or flash memory).

Using information from the sources listed above, the SCU stores the system configuration in ISA CMOS and system nonvolatile storage (NVRAM or flash memory).

At power-on or rebooting, the BIOS POST routines and the Plug and Play Auto Configuration Manager check and configure the hardware. If possible, POST will program the hardware according to the configuration stored by the SCU; if conflicts exist, an error message will be generated. You must then use the SCU to correct the conflict before the system boots.

When to Run the SCU

- ❑ When you first set up and configure the system
- ❑ If you get a configuration error message at power-on
- ❑ Whenever you add, remove, or move an ISA adapter that is not Plug and Play
- ❑ Whenever you add or remove memory
- ❑ In general, whenever you add hardware to or remove hardware from the system

Running the SCU is also recommended but optional for Plug and Play and PCI adapters.

Record Your SCU Settings

Record your SCU settings. If the default values ever need to be restored (after a CMOS-clear, for example), you must run the SCU to reconfigure your system. Referring to the worksheets could make your task easier.

How to Enter and Start the SCU

Copy SCU to diskette

Before you can run the SCU from a diskette, you must copy the SCU from the Configuration Software CD to a diskette.

1. Turn on your video display monitor and system.

2. You can enter and start the SCU in three different ways. Whether or not you can use the second and third ways described in the following table depends on how much main memory is used by drivers loaded on the system.

Use diskette

Always start with a diskette that contains the SCU you copied from the Configuration Software CD.

You can start the SCU from these sources:
How to do it:

From diskette at boot time.

Insert your SCU diskette in drive A. Press the reset button or type <Ctrl+Alt+Del> to reboot the system.

From diskette after installing your operating system.

Insert your SCU diskette in drive A. At the DOS prompt, type **a:** and press <Enter> to change to drive A. Type **AUTOEXEC** and press <Enter> to start the SCU.

From a hard drive after installing your operating system.

Insert your SCU diskette in drive A and copy the contents to a directory on your hard drive. Change to that directory, and type **AUTOEXEC** and press <Enter>.

A message like this appears:

MS DOS startup menu

1. Execute SCU
2. Execute SCU for system with PNP OS

3. If your operating system is not Plug and Play aware, type 1. If your operating system is Plug and Play aware, type 2. The Plug and Play-aware OS then manages the resources of all PCI and Plug and Play devices in the system.

4. When the SCU title appears on the screen, press any key to continue.

5. From the main menu, press <- > or <¯> to highlight an item and then press <Enter> to select it. If you are using a mouse, point to an item and single-click the left button to select it. Press <F1> at any time for help about a selection.

6. From the main menu, select "Step 1: About System Configuration" for information about setting up the system.

Six Steps in Using the SCU

The SCU main menu lists six steps to configure your system.

System Configuration Utility

Step 1: About System Configuration

Step 2: Add and Remove Boards

Step 3: Change Configuration Settings

Step 4: Save Configuration

Step 5: View Switch / Jumper Settings

Step 6: Exit

Step 1 displays a brief text overview of the SCU and some important terms and definitions. Most experienced users will skip this step. The rest of the steps will be described in the following pages.

Add and Remove Boards

Use step 2 to add, delete, or move boards. Most ISA boards cannot be detected automatically by the SCU, so you MUST use this step to add them to the system. However, PCI and ISA Plug and Play boards ARE automatically detected and added by the SCU. If the SCU did not detect a board, you can add a board using this step.

To add a board:

1. Press <Ins>.
2. From the Select the Board to Add dialog box, select the board's .CFG file and press <Enter>.

To delete an existing board:

1. Use the arrow keys to select the board you want to delete.
2. Press <Del>.
3. Confirm that you want to delete the board.

To move a board from one slot to another:

1. Use the arrow keys to select the board you want to move.
2. Press <F7>.

If you add, move, or remove boards

Manually verify the resource settings of these adapters, and any other adapters that are not locked, before saving your configuration.

To define an ISA board:

1. Press <F6> to display the ISA Board Definition dialog box. Refer to the section below for details.

Define an ISA Board

To define an ISA board that has no .CFG file, press <F6> while viewing the Add and Remove Boards screen. The ISA Board Definition dialog box will appear. It is necessary to define a board to prevent other boards in the system from using the same IRQ levels, DMA channels, I/O addresses, or memory addresses as that of the ISA board.

If there is an ISA board already installed, you can press <F9> to load its definition and then modify that definition for a new ISA board you are installing.

If there is no ISA board installed, do the following steps:

1. In the Board Name box, type a description of the board.
2. In the Manufacturer box, type the name of the board manufacturer.
3. From the Board Type box, choose the type of board.
4. From the Board Slot box, choose the type of slot.
5. In the DMA box, define up to four DMA channels.
6. In the IRQ box, define up to seven IRQ levels.
7. In the Ports box, define up to eight ranges of I/O ports.
8. In the Memory box, define up to eight memory address ranges.
9. Press <F10> to save the ISA board definition.

To load an existing ISA board: Press <F9>.

To delete an ISA board: Press <F9>, and confirm that you intend to delete the ISA definition.

Change Configuration Settings

Use step 3 to view or change the configuration settings for any board in the system. You can verify that the system board and adapter board resources are set properly. Configuring the system board involves a number of options.

To view or change the settings for a board:

1. Use the arrow keys to select the board.
2. Press <Enter>.
3. When you are satisfied with the current settings, press <Esc> to return to the main menu.

Advanced Options

The Advanced Options menu is intended for advanced users. These options are available:

Advanced Options	**Select to view this information:**
Global resource map	A list of allocated resources (DMA, logical slot, IRQ, ports, and memory)
Board details	Details about individual boards
System details	Information on the add-in board slots: slot number, type, whether bus master or not, NVRAM size

To view the Advanced Options menu: from the Change Configuration Settings dialog box, press <F9>.

Save Configuration

This step saves the configuration settings to nonvolatile RAM as well as to a backup file (.CMS file). You must save your settings once they have been configured.

View Switch/Jumper Settings

Use this step to view manufacturer's instructions about setting dip switches and jumpers on add-in boards and about running utilities to ensure the correct configuration of each adapter.

This step does not provide switch and jumper information about the system board.

Exit

This step exits to the operating system. If any configuration settings were changed, you will be prompted to restart your system to see the changes.

SCU Utilities

At the bottom of the main SCU menu, there is an option to press <F9> to display the Utilities menu. The menu lists options that control how a configuration is produced. For most of these choices, select the option line and press the spacebar to enable/disable the option.

For descriptions of the options, press <F1> for help while the Utilities menu displays on the screen. Here is a little more information about some of the utilities:

Advanced/Dealer Mode—some ISA boards can be shipped with configuration files that contain options that are not ordinarily configured by end users. If this mode is turned on, any functions marked as EXP (expert) in the shipped configuration file will be visible and can be updated.

Force new configuration—this option forces the SCU to ignore any information stored in the Extended System Configuration Data (ESCD) structure in NVRAM. This means that any ISA boards will "disappear" and that PCI and Plug and Play ISA settings will be reset.

Specify name for .cms, .inf, and .set files—this option prompts you for the base filename for the .CMS, .INF, and .SET files. This allows you to save configuration information into different filenames. Otherwise, each time a save operation completes in the SCU, the .CMS, .INF, and .SET files will be overwritten. In this system, the default base filename is int31e0, so when the SCU is saved, the files int31e0.cms, int31e0.inf, and int31e0.set are created.

Press <F5> to restore a configuration from a CMS file—a .CMS file is created each time you do a save operation in the SCU. The file contains a copy of the ESCD image as it was stored into nonvolatile memory and can be used to restore this information at a later time. If the configuration information is accidentally erased or a mistake has been made during the configuration process, it might be desirable to restore to a previous configuration. The backup .CMS file provides this mechanism to restore the ESCD image.

Press <F7> to define an ISA board. If you have an ISA board with no .CFG file, you can use the ISA Board Definition screen to define the board. (You can access the same menu from SCU Step 2 by pressing <F6>.)

Configuration Settings for the System Board

When you select SCU step 3, Change Configuration Settings, there are many menus and options available under that heading. This section about the SCU shows the screen information that displays **after you select the system board from the Change Configuration Settings screen.**

- ❑ Default values are in **bold** type.
- ❑ Select an option and press <Enter> to display the menu for an option.
- ❑ Some items are displayed only, with no selection available here.

Some of the option choices are described below the grouping. Not all of them are described because (A) a few are not user-selectable but are displayed for your information, and (B) many of the option choices are relatively self-explanatory.

Systems Group
System Identification and Version Information

System Identification String	Displays System Identification String
Config and Overlay Version	Displays SCU configuration and overlay version number
BIOS Version String	Displays BIOS version, X.XXX.XXXX.X.XXXXXXXXXX
MP Spec Version	1.1/1.4
	System Processor Displays Pentium II Processor at {XXX} MHz

Memory Subsystem Group

Shadowing ISA ROMs Options	Press <Enter> to modify the shadowing options
Extended Memory Options (Cache, 1MB ISA Hole)	15 MB Extended Memory / 256 KB Cache (WB)

Shadowing ISA ROMs Options—all onboard adapter ROM (stored in compressed form in the system flash ROM) and PCI adapter ROM will be shadowed into RAM in the ISA-compatible ROM adapter memory space between C0000h to DFFFFh. Any BIOS found on ISA devices that can be shadowed will be shadowed into adapter memory space in the same range after initialization. ISA cards that require memory-mapped read/write accessibility should be located into the 15M-16M ISA space, or the 512-640KB space, which may be enabled individually via the SCU. Shadowing for ISA devices can be disabled for various regions via the SCU. A PCI BIOS is always shadowed.

Onboard Disk Controllers

Onboard Floppy Controller	**Enable Primary / Enable Secondary /** Disable
Primary Onboard IDE Controller	**Enable /** Disable

Onboard Communication Devices

Serial Port 1 Configuration	**Port:3F8h**	**IRQ:4**	**(COM1)**
	Port:2F8h	IRQ:3	(COM2)
	Port:3E8h	IRQ:4	(COM3)
	Port:2E8h	IRQ:3	(COM4)
	Port 1 Disable		
Serial Port 2 Configuration	**Port:2F8h**	**IRQ:3**	**(COM2)**
	Port:3F8h	IRQ:4	(COM1)
	Port:3E8h	IRQ:4	(COM3)
	Port:2E8h	IRQ:3	(COM4)
	Port 2 Disable		
Serial Port 2 Mode	Serial Port Mode		
Parallel Port Configuration	**Port:378h**	**IRQ:7**	**(LPT1)**
	Port:278h	IRQ:5	(LPT2)
	Port:3BCh	IRQ:7	(LPT3)
	Parallel Port Disable		
Parallel Port Mode	**Parallel Port Mode ISA-Compatible**		
	Parallel Port Mode PS/2		
	Parallel Port Mode Extended (Not valid with LPT3)		
	Parallel Port Mode ECP on LPT1 with DMA1		
	Parallel Port Mode ECP on LPT1 with DMA3		
	Parallel Port Mode ECP on LPT2 with DMA1		
	Parallel Port Mode ECP on LPT2 with DMA3		

Floppy Drive Subsystem Group

Floppy Drive A Options	**3.5 inch 1.44 / 1.25 MB drive**	
	5.25 inch	360KB drive
	5.25 inch	1.2MB drive
	3.5 inch	720KB drive
	3.5 inch	2.88MB drive
	Disable or Not Installed	

Floppy Drive B Options	**Disable or Not Installed**
	3.5inch 1.44/1.25MB drive
	5.25inch 360KB drive
	5.25inch 1.2MB drive
	3.5inch 720KB drive
	3.5inch 2.88MB drive

IDE Subsystem Group

IDE Configuration - Primary Master	None
	User
	Auto
	CD
IDE Drive Options - Primary Master	
	Multisector Transfer
	Disabled, 2, 4, 8, or 16 Sectors
Translation Mode	**Standard CHS**
	Logical Block Addressing
IDE Configuration - Primary Slave	None
	User
	Auto
	CD
IDE Drive Options - Primary Slave	
Multisector Transfer	**Disabled**, 2, 4, 8, or 16 Sectors
Translation Mode	**Standard CHS**
	Logical Block Addressing

Automatic detection and enabling of IDE hard drives—during POST, if an IDE controller is detected, the BIOS does the following:

- ❑ Determines the types of IDE drives attached
- ❑ Sets the drive parameters for the best performance
- ❑ Maps each device into memory and I/O space
- ❑ Assigns IRQs and DMA channels so there are no conflicts

If you choose parameters for your drive that are different from the drive's native parameters, your definitions will be programmed into the drive controller.

To disable the IDE controller

If you plan to disable the IDE controller to reuse the interrupt for that controller, you must physically unplug the IDE cable from the board connector (IDE0) if a cable is present. Simply disabling the drive by configuring the SCU option does not make the interrupt available for other use.

Keyboard (KB) and Mouse Subsystem Group

Typematic Speed	**30 CPS, 26 CPS, 21 CPS, 18 CPS, 13 CPS, 10 CPS, 6 CPS, 2 CPS**
Mouse Control Option	**Mouse Auto detected**

Console Redirection

Console Redirection Control	
COM Port for Redirection	**Disable** Port Selection
Serial Port Baud Rate	2400 Baud 9600 Baud 19.2K Baud **115.2K Baud**
Hardware Flow Control	None **CTS/RTS** CTS/RTS & Xoff/Xon
Select Terminal Type	**IBM PC Extended ANSI/VT 100**

Security Subsystems Group

Administrative Password Option	**Disable**/Enabled Press <Enter> to display the Password Menu. After entering a new password, <Tab> down to verify the password. New Password Enter Password XXXXXXX Verify Password XXXXXXX
User Password Option	**Disable**/Enabled Press <Enter> to display the Password Menu. After entering a new password, <Tab> down to verify the password. New Password Enter Password XXXXXXX Verify Password XXXXXXX
Hot Key Option	**Disable**/{Ctrl-Alt-?} Press <Enter> to display menu:

	Disable Enable <Tab> down to Enable, and then <Tab> to Enter New Hot Key. Type one character, either a letter or number.
Lockout Timer	**Disable** Press <Enter> to display menu of possible choices.
Secure Boot Mode	**Disable**/Enable
Video Blanking	**Disable**/Enable
Floppy Writes	**Enable**/Disable

Security—the BIOS includes security features to prevent unauthorized access to or tampering with the system. Once the security features are enabled, access is allowed only after the correct password has been entered. Enabling is implied if you set a password here.

MultiBoot Group

Boot Device Priority	**Menu for Boot Devices**

MultiBoot Group—the sequence that you specify on the menu in the MultiBoot Group will determine the boot order. If secure mode is enabled (a user password is set), then you will be prompted for a password before the system fully boots. If secure mode is enabled and the "Secure Boot Mode" option is also enabled, the system will fully boot but will require a password before accepting any keyboard or mouse input.

SCSI ROM BIOS Options Group

SCSI-A ROM BIOS Scan	**Enable** Disable (if disabled, the SCSI-A channel is fully configured, but the ROM scan is skipped).

Management Subsystem Group

System Sensor Control	Press <Enter> to modify the System Sensors.*
System Management Mode	**Enable** / Disable
Event Logging	**Enable** / Disable

*Select and enter values to be used by server management software.

The options in the Management Subsystem Group are used to

- ❑ Set up system board voltage and temperature scanning by determining the appropriate thresholds
- ❑ Enable or disable a system speaker
- ❑ Scan the flash memory area for binaries that extend or alter critical event logging

This section does not list the sensors that will be displayed for configuring, because the list depends on information provided by the system at run-time. The information is placed in the system during manufacturing and assembly and depends on the particular configuration of the system.

However, the user interface should be constant when viewed on a sensor-by-sensor basis. The screen gives prompts for how to select and modify values and how to move around the screen. For each available sensor control, the display includes the choices shown below, with blanks for entering values by using the <+> or <-> keys ("+5 V supply" is shown here as an example):

+5 V supply
Disable / Enable
Upper Fatal:
Upper Warning:
Lower Warning:
Lower Fatal:

In most cases, we recommend leaving the controls Enabled.

However, if you have an operating system that does not handle system management interrupts, then you might want to disable the controls. When a control is disabled, the sensor itself is still active and able to give valid readings, but no system management interrupt will be generated. A server management utility can collect the readings for information or comparison.

System Management Options

System Management Mode*	**Disable** / Enable
Event Logging*	**Disable** Enable (controls onboard event logging.)
PCI System Error Detection*	**Disable** Enable **Reserved System Resources**

* Enable all three options if you are using server management software.

System Management Mode—if enabled, the embedded Server Management firmware is loaded.
Event Logging—if event logging is enabled, the BIOS can log critical and informational events to nonvolatile flash memory. Critical events are those that normally result in the system being shut down to prevent catastrophic side-effects from propagating to other parts of the system. These are example events:

- ❑ Operating system outside of the range of set temperature and voltage limits
- ❑ Multibit and parity errors in the memory subsystem
- ❑ Most errors that normally generate a Nonmaskable Interrupt (NMI) (including I/O channel check, software generated NMI, and PCI SERR events)

When such errors are detected, the system management interrupt (SMI) routines log the error or event (transparently to the OS) and cause an NMI to be generated for certain fatal events (for example, certain NMIs and uncorrectable ECC errors).

If the OS device driver is using the watchdog timer to detect software or hardware failures, and that timer happens to expire, an Asynchronous System Reset (ASR) is generated. This is equivalent to a hard reset, except that the limit registers are not reset. POST detects this event as the system reboots and will log the event to the logging area.

PCI System Error Detection—when enabled, if a PCI bus error (SERR#) is detected, a critical event is placed in the system event log and an NMI is generated. Enabling this feature has no effect when SMM Mode or Event Logging is disabled.

Server Management

The system board includes hardware components that process information about system status and that monitor power supply voltages and operating temperature. You can use server management software to send and log messages about conditions reported if the system is not operating within specified limits.

Some options are required by server management software
If you are using server management software, make sure you select these options in the SCU and Setup; some of the options in the two utilities achieve the same goal, although the menu text differs:

Enable or select this option in SCU	Enable or select this option in Setup
System Management Options, System Management Mode	SMM Feature, System Management submenu
Event Logging*	Event Logging, System Management submenu
PCI System Error Detection	System SERR Detection, System Management submenu, page 84
System Sensor Control**	

*To view an event log, you must have server management software installed.

**The SCU contains menus for entering sensor control values (thresholds), and the BIOS will load defaults from the SCU. Note that server management software may include its own menus for entering threshold values, and these values may overwrite the ones you enter using the SCU menus. For details, refer to the manual that comes with your server management software.

Using Setup

This section describes the BIOS Setup options. Use Setup to change the system configuration defaults. You can run Setup with or without an operating system being present. Setup stores most of the configuration values in battery-backed CMOS; the rest of the values are stored in flash memory. The values take effect when you boot the system. POST uses these values to configure the hardware; if the values and the actual hardware do not agree, POST generates an error message. You must then run Setup to specify the correct configuration.

Run Setup: you may run Setup to modify any standard PC AT= system board feature such as:

- ❑ Select diskette drive
- ❑ Select parallel port
- ❑ Select serial port
- ❑ Set time / date (to be stored in RTC)
- ❑ Configure IDE hard drive
- ❑ Specify boot device sequence
- ❑ Enable SCSI BIOS

Run SCU, not Setup: you must run the SCU instead of Setup to do the following:

- ❑ Add or remove any ISA board that is not Plug and Play-compatible
- ❑ Enter or change information about a board
- ❑ Set system management threshold values
- ❑ Alter system resources (such as interrupts, memory addresses, I/O assignments) to user-selected choices instead of choices selected by the BIOS resource manager
- ❑ Specify new values whenever you add or remove memory

If You Cannot Access Setup

If the diskette drive is misconfigured so that you cannot access it to run a utility from a diskette, you may need to clear CMOS memory. You will need to open the system, change a jumper setting, use Setup to check and set diskette drive options, and change the jumper back. For a step-by-step procedure, see Chapter 5, under the heading, "CMOS Jumper."

How to Enter and Start Setup

You can enter and start Setup under several conditions:

- ❑ When you turn on the system, after POST completes the memory test.
- ❑ When you reboot the system by pressing <Ctrl+Alt+Del> while at the DOS operating system prompt.
- ❑ When you have moved the CMOS jumper on the system board to the "Clear CMOS" position (enabled); for the procedure, see Chapter 5, under the heading "CMOS Jumper."

In the three conditions listed above, after rebooting, you will see this prompt:

```
Press <F2> to enter SETUP
```

If the <F2> prompt does not appear

If the <F2> prompt does not appear, the display of the prompt has been disabled in the SCU. You can enter Setup anyway by pressing <F2> right after the system memory size is shown.

For the procedure to enable the prompt, see Chapter 7 under the heading, "Press <F2> Key to Enter Setup: Prompt Does Not Display."

In a fourth condition, when CMOS/NVRAM has been corrupted, you will see other prompts but not the <F2> prompt:

- ❑ Warning: cmos checksum invalid
- ❑ Warning: cmos time and date not set

In this condition, the BIOS will load default values for CMOS and attempt to boot.

Setup Menus

Setup has six major menus and several submenus:

1. Main Menu
    - Primary IDE Master and Slave
    - Secondary Master and Slave
    - Keyboard Features

2. Advanced Menu
    - PCI Configuration
        - PCI Device, Embedded SCSI
        - PCI Device, Slot 1 - Slot 4
        - PCI/PNP ISA UMB Region Exclusion
        - PCI/PNP ISA IRQ Resource Exclusion
    - Integrated Peripheral Configuration

3. Security Menu
    - Set Supervisor Password
    - Set User Password

4. Server Menu
    - System Management
        - Server Management Information
    - Console Redirection

5. Boot Menu
    - Boot Device Priority
    - Hard Drive

6. Exit Menu

Main Menu

Default values are bold in the following tables.
You can make the following selections on the Main Menu itself. Use the submenus for other selections.

Feature	Choices	Description
System Time	HH:MM:SS	Sets the system time
System Date	MM / DD / YYYY	Sets the system date
Legacy Diskette A:	Disabled 360KB 1.2MB 720KB **1.44/1.25MB** 2.88 MB	Selects the diskette type
Legacy Diskette B:	**Disabled** 360KB 1.2 MB 720KB 1.44/1.25 MB 2.88 MB	
Memory Cache	**Enabled** Disabled	Enables Pentium II processor cache To activate this field, see "System Board Jumpers" in Chapter 2.
CPU Speed Setting	**233 MHz** 266 MHz 300 MHz 333 MHz	**Note** Depending on your configuration, this option may or may not be available.
Language	**English (US)** Spanish Italian French German	Selects which language BIOS displays

Primary IDE Master and Slave

Feature	Choices	Description
Type	**Auto** None CD-ROM User	Auto allows the system to attempt auto-detection of the drive type. None informs the system to ignore this drive. CD ROM allows the manual entry of fields described below. User allows the manual entry of all fields described below.
Cylinders	1 to 2048	Number of Cylinders on Drive. This field is changeable only for Type User. This field is informational only for Type Auto.
Heads	1 to 16	Number of read/write heads on drive. This field is available only for Type User. This field is informational only for Type Auto.
Sectors	1 to 64	Number of sectors per track. This field is available only for Type User. This field is informational only for Type Auto.
Maximum Capacity	N / A	Computed size of drive from cylinders, heads, and sectors entered. This field is available only for Type User. This field is informational only for Type Auto.
Multi-Sector Transfer	Disabled 2, 4, 8, or 16 sectors	Determines the number of sectors per block for multi-sector transfers. This field is informational only for Type Auto.
LBA Mode Control	Disabled Enabled	Enabling LBA causes logical block addressing to be used in place of cylinders, heads, and sectors. This field is informational only for Type Auto.

32 Bit I/O	**Disabled** Enabled	Enabling allows 32 bit IDE data transfers. This field is informational only for Type Auto.
Transfer Mode	Standard Fast PIO 1 Fast PIO 2 Fast PIO 3 Fast PIO 4	Selects the method for moving data to and from the drive. This field is informational only for Type Auto.

Secondary Master and Slave

Feature	Choices	Description
32 Bit I/O	**Disabled** Enabled	Enabling allows 32 bit IDE data transfers. This field is informational only for Type Auto.
Smart Monitoring	Disabled	Not available.

Keyboard Features

Feature	Choices	Description
Num Lock	**Auto** On Off	Selects power-on state for Num Lock
Key Click	**Disabled** Enabled	Enables or disables key click
Keyboard auto-repeat rate	**30/sec** 26.7/sec 21.8/sec 18.5/sec 13.3/sec 10/sec 6/sec 2/sec	Selects key repeat rate
Keyboard auto-repeat delay	1/4 sec **1/2 sec** 3/4 sec 1 sec	Selects delay before key repeat

Advanced Menu

The Advanced Menu includes selections that take you to two other configuration menus:

1. PCI configuration, which includes the following submenus:
   - PCI Device, Embedded SCSI
   - PCI Device, Slot 1 - Slot 4
   - PCI/PNP/ ISA UMB Region Exclusion
   - PCI/PNP ISA IRQ Resource Exclusion

2. Integrated Peripheral Configuration.

You can make the following selections on the Advanced Menu itself. Use the submenus for the three other selections that appear on the Advanced Menu.

Feature	Choices	Description
Plug and Play OS	**No** Yes	Select Yes if you are booting a Plug and Play capable operating system.
Reset Configuration Data	**No** Yes	Select Yes if you want to clear the system configuration data during next boot. System automatically resets to No in next boot.
Use Multiprocessor Specification	**1.1** 1.4	Selects the version of multiprocessor specification to use. Some operating systems require version 1.1.
Large Disk Access Mode	**DOS** Other	Select DOS if your OS is DOS, or Other for UNIX, Novell† NetWare†, or other OS.
Enable Memory Gap	**Disabled** Extended	Conventional creates a 128KB system memory gap starting at 512KB. Extended creates a 1MB extended memory gap starting at 15MB.
Delay on Option ROMs	**Disabled** Enabled	Forces a short delay at the end of each Option ROM scan.

PCI Configuration

The PCI Configuration Menu only contains selections that access other submenus.

PCI Device, Embedded SCSI

Feature	Choices	Description
Option ROM Scan	**Enabled** Disabled	Enables option ROM scan of the selected device.
Enable Master	**Enabled** Disabled	Enabled selects the device as a PCI bus master.
Latency Timer	Default 0020h **0040h** 0060h 0080h 00A0h 00C0h 00E0h	Minimum guaranteed time, in units of PCI bus clocks, that a device may be master on a PCI bus.

PCI Device, Slot 1 - Slot 4

Feature	Choices	Description
Option ROM Scan	**Enabled** Disabled	Enables option ROM scan of the selected device.
Enable Master	**Enabled** Disabled	Enables selected device as a PCI bus master.
Latency Timer	Default 020h **040h** 060h 080h 0A0h 0C0h 0E0h	Minimum guaranteed time, in units of PCI bus clocks, that a device may be master on a PCI bus.

PCI/PNP ISA UMB Region Exclusion

Feature	Choices	Description
C800 - CBFF	**Available** Reserved	Reserves the specified block of upper memory for use by legacy ISA devices.
CC00 - CFFF	**Available** Reserved	Reserves the specified block of upper memory for use by legacy ISA devices.
D000 - D3FF	**Available** Reserved	Reserves the specified block of upper memory for use by legacy ISA devices.
D400 - D7FF	**Available** Reserved	Reserves the specified block of upper memory for use by legacy ISA devices.
D800 - DBFF	**Available** Reserved	Reserves the specified block of upper memory for use by legacy ISA devices.
DC00 - DFFF	**Available** Reserved	Reserves the specified block of upper memory for use by legacy ISA devices.

PCI/PNP ISA IRQ Resource Exclusion

Feature	Option	Description
IRQ 3, 4, 5, 7, 9, 10, 11, 15	**Available** Reserved	Reserves the specified IRQ for use by legacy ISA devices.

Integrated Peripheral Configuration

Feature	Choices	Description
Serial Port A	Disabled **Enabled** Auto PnP OS	Auto forces BIOS to configure the port. PnP OS forces OS configures the port.
Base I/O Address	**3F8** 2F8 3E8 2E8	Selects the base I/O address for COM port A.
Interrupt	**IRQ 4** IRQ 3	Selects the IRQ for COM port A.
Serial Port B	Disabled **Enabled** Auto PnP OS	Auto forces BIOS to configure the port. PnP OS forces OS configures the port.
Mode	**Normal** IrDA† ASK-IR	Selects serial port B mode.
Base I/O Address	3F8 **2F8** 3E8 2E8	Selects the base I/O address for COM port B.
Interrupt	IRQ 4 **IRQ 3**	Selects the IRQ for COM port B.
Parallel Port	Disabled **Enabled** Auto PnP OS	Auto forces BIOS to configure the port. PnP OS forces OS configures the port.
Mode	Output only Bi-directional EPP **ECP**	Selects parallel port mode.
Base I/O Address	**378** 278	Selects the base I/O address for LPT port.
Interrupt	IRQ 5 **IRQ 7**	Selects the IRQ for LPT port.

Feature	Choices	Description
DMA channel	**DMA 1** DMA 3	Selects the DMA for LPT port.
Floppy disk controller	Disabled **Enabled**	Enables onboard diskette controller.
Base I/O Address	**Primary** Secondary	Selects base I/O address for diskette controller.
PS/2 Mouse	Disabled **Enabled**	Enables or disables onboard mouse. Disabling the mouse frees up IRQ 12. If enabled, the OS can determine whether to enable or disable the mouse.

Security Menu

You can make the following selections on the Security Menu itself. Enabling the Supervisor Password field requires a password for entering Setup. The passwords are not case sensitive.

Feature	Choices	Description
Administrator Password is	**Clear**	Status only; user cannot modify.
User Password is	**Clear**	Status only; user cannot modify. Once set, this can be disabled by setting it to a null string, or by clearing password jumper on system board (see System Board Jumpers in Chapter 2).
Set Administrative Password	Press Enter	When the <Enter> key is pressed, the user is prompted for a password; press ESC key to abort. Once set, this can be disabled by setting it to a null string, or by clearing password jumper on system board (see System Board Jumpers in Chapter 2).
Set User Password	Press Enter	When the <Enter> key is pressed, the user is prompted for a password; press ESC key to abort. Once set, this can be disabled by setting it to a null string, or by clearing password jumper on system board (see System Board Jumpers in Chapter 2).
Password on Boot	**Disabled** Enabled	Requires password entry before boot. System will remain in secure mode until password is entered. Password on Boot takes precedence over Secure Mode Boot.
Diskette Access	**Administrator** User	Controls access to diskette drives.
Fixed Disk Boot Sector	**Normal** Write Protect	Write-protects boot sector on hard disk to protect against viruses.
System Backup Reminder	**Disabled** Daily Weekly Monthly	Displays reminder message at boot.

Feature	Choices	Description
Virus Check Reminder	**Disabled** Daily Weekly Monthly	Displays reminder message at boot.
Secure Mode Timer	**Disabled** 1 min 2 min 5 min 10 min 20 min 1 hr 2 hr	Period of key/PS/2 mouse inactivity specified for secure mode to activate. A password is required for secure mode to function. Cannot be enabled unless at least one password is enabled.
Secure Mode Hot Key (Ctrl-Alt-)	[ ] [A, B, ..., Z]	Key assigned to invoke the Quicklock feature. Cannot be enabled unless at least one password is enabled.
Secure Mode Boot	**Disabled** Enabled	System will boot in secure mode. The user must enter a password to unlock the system. Cannot be enabled unless at least one password is enabled.
Video Blanking	**Disabled** Enabled	Blank video when secure mode is activated. The user must enter a password to unlock the system. Cannot be enabled unless at least one password is enabled.
Floppy Write Protect	**Disabled** Enabled	When secure mode is activated, the diskette drive is write protected. The user must enter a password to disable. Cannot be enabled unless at least one password is enabled.
Front Panel Lockout	**Disabled** Enabled	When secure mode is activated, the reset and power switches are locked. The user must enter a password to unlock the system. Cannot be enabled unless at least one password is enabled.

Server Menu

The Server Menu includes selections that take you to two other configuration menus:

1. System Management
   - Server Management Information
2. Console Redirection

You can make the following selections on the Server Menu itself.

Feature	Choices	Description
PCI IRQs to IO-APIC mapping	**Disabled** Enabled	If enabled, BIOS will describe direct PCI interrupt connections to IO APIC in multiprocessor table. Do not enable if OS does not support this feature.
PCI IRQ to External MUX	**Disabled** Enabled	Routes PCI IRQs to external multiplexer (MUX) and inputs PIIX4. Disables PIIX4 MUX.
Processor Retest	**No** Yes	If YES, BIOS clears historical processor status and retests all processors on next boot.

System Management

Feature	Choices	Description
I2C User Defaults	**Disabled**	If enabled, I^2C user default settings will be programmed.
System Management Mode	**Disabled** Enabled	Enabled loads the embedded server management firmware.
System Event Logging	Disabled **Enabled**	When enabled, system events will be logged by BIOS and BMC.
Clear Event Log	**No** Yes	Yes clears the system event log.
Fault Resilient Booting	**Disabled** Lvl-1 Lvl-2	Determines level of Fault Resilient Booting.

Feature	Choices	Description
PERR Reporting	Lvl-3 **Disabled** SMI Only SMI &NMI	If selected, system detects and reports PERR on PCI buses.
SERR Reporting	**Disabled** Enabled	Enabled generates a PCI bus system error report.
Test Extended Memory	**Enabled** Disabled	Diagnostic option only.
SMM Debug Mode	**Enabled** Disabled	If enabled, the SMM outputs to video and Port 80.
CPU Slot1 and Slot2 Presence	**Enabled** Disabled	Enables or disables processor at Slot1 or Slot 2.

Server Management Information

No items on this menu can be modified by the user. If items require changes, consult your system administrator.

Console Redirection

Feature	Choices	Description
COM Port Address	**Disabled** 3F8 2F8 3E8	When enabled, console redirection uses the I/O port specified.
IRQ #	3 or 4	When console redirection is enabled, this displays the IRQ assigned per the address chosen in the COM Port Address field.
Baud Rate	9600 **19.2k** 38.4k 115.2k	When console redirection is enabled, use the baud rate specified.
Flow Control	None CTS/RTS XON/XOFF **CTS/RTS + CD**	None disallows flow control. CTS/RTS is hardware flow control. XON/XOFF is software flow control. CTS/RTS +CD is hardware plus carrier-detect flow control.

Boot Menu

The Boot Menu includes selections that take you to two other configuration menus:

1. Boot Device Priority
2. Hard Drive

Items on the Boot Menu can be prioritized. Use the up or down arrow keys to select a device, then press the <+> or <-> keys to move the device higher or lower in the boot priority list.

You can make the following selections on the Boot Menu itself.

Feature	Choices	Description
Floppy Check	**Disabled** Enabled	If Enabled, system verifies diskette type on boot. Disabled results in a faster boot.
Summary Screen	Disabled **Enabled**	If Enabled, system displays system configuration during boot.

Boot Device Priority

Boot Priority	Device	Description
1.	Diskette Drive	Attempts to boot from drive A:
2.	Hard Drive	Attempts to boot from a hard drive device.
3.	ATAPI CD-ROM Drive	Attempts to boot from an ATAPI CD-ROM drive.
4.	Diagnostic boot	Attempts to boot from diagnostic boot partition of the flash memory.

Hard Drive

For options on this menu, use the up or down arrow keys to select a device, then press the <+> or <-> keys to move the device higher or lower in the boot priority list

Option	Description
1. Other Bootable Device	N / A
2. WDC AC21600H	N / A

Exit Menu

You can make the following selections on the Exit Menu. Select an option using the up or down arrow keys, then press <Enter> to execute the option. Pressing <Esc> does not exit this menu. You must select one of the items from the menu or menu bar to exit.

Choices	Description
Exit Saving Changes	Exits after writing all modified Setup item values to NVRAM.
Exit Discarding Changes	Exits leaving NVRAM unmodified.
Load Setup Defaults	Loads values of all Setup items from previously saved custom defaults.
Load Custom Defaults	Loads default values for all Setup items.
Save Custom Defaults	Saves present Setup values to custom defaults.
Discard Changes	Reads previous values of all Setup items from NVRAM.
Save Changes	Writes all Setup item values to NVRAM.

Using SCSI*Select*

The SCSI*Select* utility detects the number of AIC-7880 wide/fast-20 SCSI III host adapters in the system. Use the utility to:

- Change default values
- Check or change SCSI device settings that may conflict with those of other devices in the system
- Perform a low-level format on SCSI devices installed in the system

How to Enter and Start SCSI*Select*

1. Turn on your video monitor and system. After a few seconds POST begins to run. After the memory tests are completed, if you do *not* choose to enter Setup and you *do* have an operating system installed, a SCSI*Select* prompt will appear. Record your settings.

□□□Press <Ctrl><A> for SCSISelect(TM) Utility!□□□

2. Press <Ctrl+A> to run the utility. SCSI*Select* has these menus:

1. Main Menu
   - Configuration
     - Boot Device Configuration
     - SCSI Device Configuration
     - Advanced Configuration Options
   - SCSI Disk Utilities

2. Exit Menu

To navigate the menus:	**Press**
Exit a menu or the utility	<Esc>
Select an item	<Enter>
Go to previous item	Up arrow
Go to next item	Down arrow
Reset to host adapter defaults	<F6>

Main Menu, SCSI*Select*

The main SCSI*Select* menu shows the name of the host adapter and its address: <Host adapter> at Bus:Device xx:xxh. There are two menu options.

Options	Comment
Configure/View Host Adapter Settings	Press <Enter> to display the Configuration menu.
SCSI Disk Utilities	Press <Enter> to display the SCSI Disk Utilities menu. The utility scans for all SCSI devices installed in the system and lists them. Press <Enter> to select the device you want to run utilities on. The default ID for the SCSI host adapter is #7. If you select the host adapter, you will see only a message stating that fact; you cannot specify any options for the host adapter from the utilities menu.

Configuration Menu, SCSI*Select*

Feature	Default	Choices
SCSI Bus Interface Definitions		
Host Adapter SCSI ID	7	0 - 15
SCSI Parity Checking	Enabled	Enable/Disable
Host Adapter SCSI Termination	Low ON/High ON	Low ON/High ON Low OFF/High OFF Low OFF/High On
Additional Options		
Boot Device Options	Press <Enter>	See Boot Device Options, SCSI*Select*.
SCSI Device Configuration	Press <Enter>	See SCSI Device Configuration, SCSI*Select*.
Advanced Configuration Options	Press <Enter>	See Advanced Configuration Options, SCSI*Select*.

Host Adapter SCSI ID—Each device on the SCSI bus, including the adapter, must have a unique ID. The ID defines the device, and the priority of the ID determines which device controls the bus when two or more devices try to use it at the same time. Each adapter on the bus, whether 8- or 16-bit, has a default ID of 7, so the adapter always has the highest priority. This is the priority model:

Device priority model	Highest priority ID	Lowest priority ID
8-bit devices (narrow SCSI)	7	0
16-bit devices (wide SCSI)	7 through 0	15 through 8
(In this case, ID 7 has the highest priority and ID 8 the lowest)		

SCSI Parity Checking—when enabled, the host adapter uses SCSI parity checking to verify the accuracy of data transfer on the SCSI bus. If a device on the bus does not support SCSI parity, the option must be disabled.

Host Adapter SCSI Termination—the setting for this option is determined by (1) the location of the host adapter on the bus and (2) whether the SCSI devices connected to the bus are narrow, wide, or a combination. The bus must have a set of resistors, called *terminators*, either installed in or enabled on the first and last SCSI devices on the bus, or else data transfer may not be accurate. The host adapter itself is the SCSI device at one end of the bus, and termination on the adapter cannot be disabled. On a 16-bit adapter, termination is enabled for both the low byte (bits 0-7) and the high byte (bits 8-15). If there is no 8-bit adapter at the end of the bus, you must disable termination by using the option in the SCSI*Select* Configuration menu. This is the termination model:

Host adapter location	SCSI devices connected to bus	Host Adapter SCSI Termination choice
Installed at end of bus	***only*** 8-bit, ***or*** ***only*** 16-bit	Low ON / High ON (default)
Installed at end of bus	***both*** 8-bit and 16-bit	Low ON / High ON (same as default) **Note:** Last device must be 16-bit and terminated.
Not at end of bus*	***only*** 16-bit	Low OFF / High OFF
Not at end of bus*	***both*** 8-bit and 16-bit	Low OFF / High On

*In this system, the host adapter on the system board is always at one end of the bus.

Boot Device Options, SCSI*Select*

Feature	Option	Comment
Boot Target ID	0-15	The default boot device is at SCSI ID 0 with logical unit number (LUN) 0. To specify a different boot device, choose a different SCSI ID (0 through 7 on 8-bit adapters, 0 through 15 on 16-bit adapters).
Boot LUN Number	0-7	The logical unit number (LUN) can be 0 through 7 (on 8-bit or 16-bit adapters). If you disable Multiple LUN Support in the Advanced Configuration menu, specifying a number here has no effect.

Boot Target ID—The default boot device is the device at SCSI ID 0 with logical unit number (LUN) 0. To specify a different boot device, choose a different SCSI ID (0 through 7 on 8-bit adapters, 0 through 15 on 16-bit adapters).

Boot LUN Number—If the boot device has multiple logical units, you must also specify the boot logical unit number (LUN). This can be 0 through 7 (on 8-bit or 16-bit adapters). Multiple LUN support can be disabled in the SCSI*Select* Advanced Configuration menu.

SCSI Device Configuration, SCSI*Select*

The screen shows five features that can be configured independently for each of up to 15 devices (SCSI Device ID #0 through #15)

Feature	Default	Choices
Initiate Sync Negotiation	Yes	Yes / No
Maximum Sync Transfer Rate	40.0 for 16-bit 20.0 for 8-bit	16-bit devices: 20.0, 26.8, 32.0, 40.0 8-bit devices: 10, 13.4, 16.0, 20.0
Enable Disconnection	Yes	Yes / No
Initiate Wide Negotiation	Yes	Yes / No
Send Start Unit Command	Yes	Yes / No No effect if the BIOS is disabled.

Initiate Sync Negotiation—when enabled (set to Yes), the host adapter initiates synchronous negotiation with the SCSI device; when No, the adapter does not initiate synchronous negotiation. Normally you should leave this set to Yes, because the SCSI adapter and its attached devices can transfer data faster in synchronous mode than in asynchronous. If a device does not support synchronous negotiation, the adapter will automatically transfer data asynchronously. If the device initiates synchronous negotiation, the host adapter always responds accordingly.

Maximum Sync Transfer Rate—the setting determines the maximum synchronous data transfer rate that the adapter will negotiate with the device. If you have disabled (set to No) the Initiate Sync Negotiation option, the maximum sync rate you select is the rate at which the adapter accepts data from the device; there is no negotiation.

Enable Disconnection—when set to Yes, the adapter allows a SCSI device to temporarily disconnect from the bus, and the adapter can continue to do other bus operations. When no, the adapter does not allow a SCSI device to disconnect.

- Leave this set to Yes if there are two or more SCSI devices on the bus
- Change to No if there is only one SCSI device connected to the bus (besides the adapter).

Initiate Wide Negotiation—when set to Yes, the adapter initiates wide negotiation with each 16-bit SCSI device. You can leave this set to Yes even if there are 8-bit devices connected; the adapter will not attempt wide negotiation with 8-bit devices.

Send Start Unit Command—this option reduces the load on the system power supply by allowing the host adapter to power-up SCSI devices one at a time at boot time.

- Yes is required for SCSI hard drives; the adapter sends the Start Unit Command to each SCSI device individually to power-up.
- When set to No, all SCSI devices power up at the same time. If a device has been jumpered to wait for a start command, it will not start.

If you enable the command for more than one device, the adapter sends the command first to the boot device specified in the Boot Device Options menu. After the first device responds, the adapter sends the command to the remaining SCSI devices, beginning with the lowest SCSI ID.

Do not enable the Send Start Unit option before checking...

Make sure the AIC-7880 BIOS option is enabled (see Advanced Configuration Options).

Check the manual that comes with your SCSI device to make sure the device supports the command. If so, it is likely that you will need to change a switch or jumper setting on the device so it can respond to the command.

Advanced Configuration Options, SCSI*Select*

Feature	Default	Choices
If you disable the Host Adapter BIOS option, the following options have no effect.		
Host Adapter BIOS (Configuration Utility Reserves BIOS Space)	Enabled	Enable/Disable
Support Removable Disks Under BIOS as Fixed Disks	Boot Only	Boot Only All Disks Disable
Extended BIOS Translation for DOS Drives greater than 1 GB	Enabled	Enable/Disable
Display <Ctrl-A> Message During BIOS Initialization	Enabled	Enable/Disable
Multiple LUN Support	Disabled	Enabled/Disable
BIOS Support for Bootable CD-ROM	Enabled	Enable/Disable
BIOS Support for Int13 Extensions	Enabled	Enable/Disable
Support for Ultra SCSI Speed	Enabled	Enable/Disable

CAUTION, understand the options before changing defaults
Do not change the default settings in the SCSI*Select* Advanced Configuration Options menu without understanding the consequences of making changes.

Host Adapter BIOS—The AIC-7880 BIOS must be enabled to allow these actions:

- Boot from a SCSI hard drive on the bus.
- Enable any of the other options listed on the same menu (Advanced Configuration Options).
- Boot from a SCSI CD-ROM drive. If any IDE devices are selected in the boot order, they will be chosen first over the SCSI device.

If the devices on the SCSI bus are controlled by device drivers and thus do not need a BIOS, you can disable the option. This frees about 16 KB of memory and shortens the boot time by up to 60 seconds. However, 2 KB of memory space is still reserved per PCI and Plug and Play specifications.

Support Removable Disks Under BIOS as Fixed Disks(i.e., hard disks)—the setting controls how removable-media devices are supported by the AIC-7880 BIOS. The choices are:

Choice	Description
Boot Only (default)	Only the removable-media drive designated as the boot device is treated as a fixed (hard) disk drive. The AIC-7880 BIOS must be enabled.
All Disks	All removable-media drives supported by the AIC-7880 BIOS are treated as fixed drives. (If you are a NetWare user: all removable-media drives are automatically supported by NetWare as fixed disks regardless of how you set this option.) The AIC-7880 BIOS must be enabled.
Disabled	No removable-media drives running under DOS are treated as fixed drives. Driver software is needed because the drives are not controlled by the AIC-7880 BIOS.

CAUTION, do not remove media from drive under BIOS control
Do not remove media from a removable media drive if the drive is under the control of the AIC-7880 BIOS.

Extended BIOS Translation for DOS Drives > 1 GB—when Enabled, drives handled by the AIC-7880 BIOS can use extended translation (255 heads, 63 sectors per track) if their formatted capacity is greater than 1 GB and standard translation if smaller than 1 GB.

> **CAUTION, before changing option, back up hard disks!**
> First back up the hard disks if you need to change this setting and the translation scheme! All data is erased when you change from one translation scheme to another.

Display <Ctrl-A> Message During BIOS Initialization—if Enabled, at boot time a prompt displays to let you run the SCSI*Select* program.
Multiple LUN Support—the default setting is Disabled. Enable the option if any devices have multiple logical units.

BIOS Support for Bootable CD-ROM—when enabled, the system can boot from a CD-ROM. The option displays only if the adapter BIOS is configured to include it. To boot from a hard drive or other device, either disable this option or make sure there is no bootable CD in the drive.

BIOS Support for Int 13 Extensions—when enabled, the adapter BIOS supports Int 13h extensions, required for bootable CD-ROMs. The option displays only if the adapter BIOS is configured to include bootable CD-ROM support. You can disable the option if the boot device is *not* a CD-ROM, but it does no harm to leave it enabled.

Support for *Ultra* SCSI Speed—the default setting is Disabled. The option displays only if the BIOS is configured to support *Ultra* SCSI speeds. Enable the option to use *Ultra* SCSI speeds with the AIC-7880.

SCSI Disk Utilities Menu, SCSI*Select*

When you select SCSI Disk Utilities from the SCSI*Select* Main Menu, the utility scans the SCSI bus for connected devices and lists the SCSI IDs and associated devices on the bus.

From the list of devices, select the one you want to format or verify.

If a device has multiple logical units, a menu of LUNs appears.

Select the device you want to format or verify. A small menu appears. Select Format Disk or Verify Disk.

Utility	What it does	Comment
Format Disk	Does a low-level format on the hard disk drive. Before it starts, a prompt appears asking you to confirm that you want to format the hard disk.	**CAUTION** You cannot stop the formatting once it starts! Do NOT answer yes unless you intend to format the disk.
Verify Disk Media	Scans the selected hard disk for bad blocks and prompts you to reassign them.	You can press <Esc> at any time to stop the verification task.

Exit Menu, SCSI*Select*

Feature	Option	Comment
Exit Utility?	Yes No	When you finish configuring SCSI devices, select "Yes" and press <Enter>. This message appears: "Please press any key to reboot"

Installing Video Drivers

After configuring the system, you need to install video drivers to take full advantage of the features of the onboard Cirrus Logic CL-GD5446 super VGA video controller.

- The Configuration Software CD includes video drivers for use with DOS and Windows NT. Check the README.TXT file on the CD for information on installing these drivers.
- For other operating systems, see your OS instructions for installing device drivers.

Configuring the Network Controller

This system includes the onboard Intel 82557 PCI LAN Controller. The IRQ level and I/O address of the onboard controller are automatically set each time you start the system. PCI systems automatically detect and configure PCI-compliant adapters while booting.

For information about network software and configuration, refer to the Configuration Software CD shipped with this system.

Chapter 4

Common Problems

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Introduction

Occasionally while setting up and configuring a computer system, an error may occur or an important element may be forgotten. This section provides information regarding the most frequently encountered problems, as well as many quick and simple solutions. If you continue to experience problems and this section fails to provide solutions, please feel free to contact Micron technical support (see Appendix A: Contacting Technical Support).

Problems During Boot

Problem

When the power switch is turned on, the system does not power up (i.e., the exhaust fan does not run, the power indicator light is not illuminated, the hard disk does not begin to spin, etc.), and no audible "beep" is heard.

Possible Cause

- ❑ The power cable is unplugged or defective.
- ❑ Voltage switch is improperly set.
- ❑ No power at outlet.
- ❑ Bad power supply.

Solution Checklist

- ❑ Check to ensure the power cable is plugged in correctly and firmly. Try a second power cable, if available, or test the cable for continuity. Replace original cable if it is found to be defective.

- ❑ Check the red voltage switch (located at the rear of the unit near the fan) and ensure that it is set for the proper voltage (115V in the U.S. and Canada).

- ❑ Check the outlet with another appliance (e.g., a lamp).

- ❑ If a surge suppressor or Uninterruptable Power Supply (UPS) is being used, temporarily bypass the surge suppressor and plug the unit directly into the wall outlet. The surge suppressor or UPS may be faulty.

Problem

When the power switch is turned on, the system has power (i.e., the exhaust fan runs, the power indicator light is illuminated, the hard disk begins to spin, etc.), but the system appears dead. Generally the keyboard LEDs will stay on.

Possible Cause

- ❑ The monitor may not be turned on or plugged in.
- ❑ A peripheral card may not be seated correctly on the system board.
- ❑ A peripheral card may be defective.
- ❑ A floppy drive may be defective.

Solution Checklist

- ❑ Check to make sure the monitor power cable is plugged into the wall outlet and the back of the monitor. Also verify the monitor video cable is plugged into the video card in the back of the computer. Check the monitor to ensure that the power is on. If you suspect a problem with the monitor, please refer to the manual that was provided with it.

- ❑ Carefully open the system unit. Press down firmly on all peripherals in the expansion slots.

- ❑ With the system power shut off, remove one peripheral card, power up the system, and wait a few moments to see if the keyboard lights turn off. If they don't turn off, repeat the above steps with the next peripheral card until all have been removed. After this has been completed, contact Micron technical support for further assistance.

- ❑ With the system power shut off, completely disconnect one of the floppy drives and power up the system. If the keyboard lights do not turn off after a few moments, repeat the above procedure until all drives are disconnected. After this has been completed, contact Micron technical support for further assistance.

- ❑ Contact Micron technical support if none of the above procedures is effective.

Problem

System powers on, the display works, but the system does not complete the boot process or you see one of the following error messages:

"Hard Disk Controller Failure."
"Fixed Disk Configuration Error."
"Operating System Not Found."

Possible Cause

- ❑ Hard drive is incorrectly set up in CMOS.
- ❑ Hard drive cable may not be properly connected.
- ❑ CMOS may have lost settings.
- ❑ SCSI controller card may have lost settings.
- ❑ Files on hard drive may be corrupted.
- ❑ Hard drive may be defective.

Solution Checklist

- ❑ If you have a SCSI hard drive, make sure that the CMOS says Not Installed for all hard disk drives. For help in getting to your CMOS settings, see Chapter 3 - The BIOS Setup Program.

- ❑ For an IDE drive - check the parameters of the hard drive. Have the system re-Autodetect the settings of the drive. To do this, highlight the first hard disk from the MAIN screen of your CMOS Setup (labeled Primary IDE Master) and press the <Enter> key. On the next screen press <Enter> again and select AUTO CONFIGURED. Press <Enter> and the system should reassign the proper values to the hard drive. You will also want to make sure that the primary IDE controller is enabled. To verify, move to the ADVANCED section of CMOS and press <Enter> on the line that says PERIPHERAL CONFIGURATION. Press <Enter> again and select AUTO. Exit and save your changes.

- ❑ With the power OFF, carefully open the system unit. Reset the gray ribbon cable that is connected to the hard drive and to the motherboard or SCSI Controller Card. To assist you, the colored stripe going down the side of the gray controller cable signifies pin one and should be connected to pin one of the controller and drive. Also, check to ensure that the power connector in the Hard Drive is secure. Power the system back up and perform an AUTODETECT of the hard drive again.

Problem

The system displays the error message "Non-system Disk or Disk Error" or "Operating System Not found."

Possible Cause

- ❑ The System files are missing from the Boot Sector of the hard drive.
- ❑ The diskette in Drive A: is not bootable.
- ❑ CMOS is incorrectly configured.

Solution Checklist

- ❑ Your system is designed to first check the floppy drive for a bootable diskette. If there is a diskette in the floppy drive when you reset your system the above error message will appear unless the diskette is a bootable system diskette. Remove the diskette from drive A: and reboot your computer. If the computer still does not boot up, you may have to restore system files to the hard drive.

- ❑ To restore system files:
  Make sure your hard drive information is correct in CMOS (see above for help in correctly setting up your CMOS). Insert the DOS or Windows 95 Boot Diskette provided with your Micron system and either reset or power on your system with the disk in the floppy drive.

- ❑ If you boot to a setup utility, exit out so that your computer is at the A: prompt. From the A:\ prompt type SYS C:\ and press the <Enter> key. Remove the Boot Diskette and reboot your system by pressing the Reset button on the front of your PC.

System Problems

Problem

A large number of damaged sectors are encountered when attempting to format diskettes.

Possible Cause

- ❑ Typically, Micron computers are provided with a 1.44MB 3.5" floppy drive. An attempt may have been made to format a low-density disk in one of the Micron high-density floppy drives.

Solution Checklist

- ❑ Please refer to the DOS manual for more information about how to format low-density diskettes in high-density floppy drives.

Problem

The IDE CD-ROM is not being recognized by the system.

Possible Cause

- ❑ CMOS is configured incorrectly.
- ❑ The connection to the CD-ROM is improper or loose.

Solution Checklist

- ❑ Check in the system's CMOS Setup to ensure that the PERIPHERAL CONFIGURATION mode is set to Auto. For help in getting to your CMOS settings, see Chapter 3 - The BIOS Setup Program.

- ❑ With the power OFF, carefully open the system unit. Reconnect the CD-ROM ribbon cable on the motherboard and at the back of the CD-ROM. To assist you, the colored stripe going down the side of the gray controller cable signifies pin one and should be connected to pin one of the controller and drives. Also, check to ensure that the power connector in the CD-ROM is secure.

Problem

The system displays the error message COM Port 2F8 conflict during boot, or the system beeps, and displays the message "Press F1 to Continue, F2 for Setup."

Possible Cause

- ❑ System CMOS has been reset to defaults, and you have a modem installed on COM 2.

Solution Checklist

- ❑ Check that the modem settings are set correctly and not conflicting with any other devices.

  On Windows 95™ systems Serial/Com Port B should be set to COM 4. For DOS and Windows for Workgroups™, Serial/Com Port B should be set to Disabled or None. For help on CMOS settings, refer to Chapter 3- The BIOS Setup Program.

- ❑ If you are using Windows 95™ and the CMOS is set correctly, remove the checkmark from Use Original Configuration (Current) under the properties section for your Communications Port (Com 4) in device manager. Then, remove your modem from device manager and have the Windows 95™ operating system re-detect your modem.

Problem

The monitor is flickering noticeably or the video is distorted.

Possible Causes

- ❑ Interference
- ❑ Invalid or corrupt video drivers.

Solution Checklist

- ❑ Check for high power-draining devices, or high noise devices in the area. Examples include heaters, air conditioners, other monitors, other computers, fluorescent lights, printers, microwaves, or televisions. Any of these devices could cause a flickering in your display because of the interference they can put into the power lines or the environment. Also, temporarily unplug any other devices that are in the same outlet or surge protector that the monitor and computer are using. This could be amplified speakers, or one of the devices listed above.

- ❑ Temporarily switch your video display to use default standard VGA drivers. Your display will not have the clarity or color definition that it usually does, however, check to see if everything appears normal. If it does, try reinstalling the video drivers specific to your video card that shipped with your system, or check the Micron Electronics Internet Site for updated video drivers.

Problem

After installing a new peripheral card, an unrelated part of the system suddenly stops working.

Possible Cause

- ❑ The new card may be attempting to use some of the same system resources, such as address space, I/O ports, interrupt lines, etc., and may be conflicting with the failing part of the system.
- ❑ When installing the new card, a different peripheral card or a cable may have been knocked loose.

Solution Checklist

- ❑ Remove the new card and retry system.
  If it works, you will need to change the I/O ports, interrupt lines or address regions the new card uses. Most cards have jumpers or switches that can be changed to reconfigure the settings. Refer to the documentation that came with the card to determine how to change the settings. If you have any questions, contact the card's manufacturer.

- ❑ Double check all the gray ribbon cables and power connectors to ensure that they are plugged in correctly and securely.

Hard Disk Problems

Problem

System has to be booted from a floppy disk. Hard drive is either unrecognized or unreadable.

Possible Cause

- ❑ The connections between the drive and the controller may be defective or loose.

- ❑ The hard drive's root directory or file allocation table may be corrupted. The controller or hard drive may also be defective.

Solution Checklist

- ❑ Check that the hard drive and controller are connected properly.

- ❑ If hard drive recovery software is available, use it to repair the damage. The only other solution is to attempt a high-level (DOS) format on the drive.

  Do not attempt to low-level format the drive!

  If the drive cannot be formatted, either the drive or the controller may be defective. Contact Micron technical support.

Problem

System has to be booted from a floppy disk. Hard disk is completely functional, but cannot be used for boot-up.

Possible Cause

- ❑ The hard drive's boot sector may be corrupted.

Solution Checklist

- ❑ If hard drive recovery software is available, attempt to use it to repair the damaged boot sector. The only other solution is to attempt a high-level (DOS) format on the drive and transfer the DOS system to the boot sector.

  Do not attempt to low-level format the drive!

  Backup your data before formatting your drive.

Problem

Read/write, sector, data, or seek errors occur when attempting to access files on the hard drive.

Possible Cause

- ❑ The format may be fading.
- ❑ The hard drive may be developing media errors.
- ❑ The file allocation table may be corrupted.

Solution Checklist

- ❑ Using a file-by-file backup method, backup as much data as you can, then reformat the drive. If the format is successful, use a disk diagnostic software application to test the media of the drive (make sure the application locks out any errors it finds to make them inaccessible from DOS). Finally, restore your files from the backup tape or diskettes.

Introduction

If you are experiencing problems with your Micron system and Chapter 4, "Common Problems" does not provide the information needed to correct your problem, feel free to contact Micron Technical Support at 1-800-877-8856. Additional areas of support may be found by contacting the Micron Technical Support BBS at 1-800-270-1207, Technical Support Internet Mail: techsupport.meic@micronpc.com, Compuserve: GO MICRON or GO PCVEND-21, and Micron Electronics Home Page: http://www.mei.micronpc.com. But before you do, take a few minutes to read this section for information about the equipment and information you might need to help the technical support representative diagnose the problem.

Before You Call

Before contacting Micron Technical Support, please follow the next few steps. These steps are designed to prepare you for any of the questions the technical support representative might ask or any procedures he or she may need you to do. This will help solve your problem in the shortest possible time.

1. Make sure your system is plugged into a grounded power outlet.

2. Locate the failing system as near a telephone as possible, preferably close enough so that you can simultaneously talk with the technical support representative while you work on the system.

3. Have a medium- to small-sized Phillips-head screwdriver available. It's possible you may need to open your system to correct the problem.

4. Write down all error information you can remember, including error messages, software used (with version numbers), and other relevant information.

We hope Micron Technical Support will be able to solve your problem over the telephone. However, in extreme cases, your system may need to be returned to Micron Electronics, Inc. for repair. The next section describes what to do if this is the case.

Returning Equipment to Micron Electronics

If it is determined that your system needs to be returned to Micron for repair or replacement, please observe the rules listed below. Failure to follow any of these rules may result in long delays in repair or the simple return of the system without repair.

1. Contact Micron Technical Support at 1-800-877-8856 to obtain an RMA (Return Material Authorization) number and to obtain shipping instructions before returning any portion of your system.

2. Make sure all printed-circuit boards or static-sensitive peripherals are completely enclosed in anti-static bags or foam.

3. Print the RMA number in large, legible numbers in black ink on the outside of the shipping boxes.

4. Enclose a note describing the problem as well as the name of the technical support representative who authorized the return.

Micron also highly recommends that you follow these additional steps for your protection:

1. Make a complete backup of your hard drive(s) before returning the system.

2. Use the original packing material that came with your system.

Please ship to the following address:

Micron Electronics, Inc.
Attn: RMA #xxxx
1400 Shilo Drive
Nampa, ID 83687

POST and Boot Messages

POST (Power On Self Test) has two kinds of messages; those messages are the Error message and the Informational message. The following tables list these messages, their causes, and their solutions.

MESSAGE	POSSIBLE CAUSE	SOLUTION
Diskette Drive A Failure	Drive A failed or is missing.	Check Setup and cable connections.
Diskette Drive B Failure	Drive B failed or is missing.	Check Setup and cable connections.
Extended Ram Failed at Offset: nnnn	Extended memory not working or configured properly.	Replace defective memory.
Failing Bits: nnnn	Memory failure in System Extended or Shadow memory.	Replace defective memory.
Fixed Disk X Failure (where X=0 or 1)	The hard disk is not configured or not working properly.	Rerun SETUP and check connections or replace hard disk.
Fixed Disk Controller Failure	The controller has failed.	Check configuration and connections or replace system board.
Incorrect Drive A Type	Floppy drive A: not set correctly in Setup.	Run Setup.
Incorrect Drive B Type	Floppy drive B: not set correctly in Setup.	Run Setup.
Invalid NVRAM	NVRAM chip is bad.	Requires replacement of system board.
Keyboard Error, Keyboard Controller Error or Keyboard Error: nn	The keyboard or keyboard controller failed. A key is jammed or was held down during boot.	Check connections. You may have to replace the keyboard or system board. Make sure keys are not jammed or dirty.
Keyboard Locked	Keyswitch on the front of the case is locked.	Unlock the keyswitch.

Table B-1. Post and Boot Messages

Glossary

Application: A software program that operates under an operating system to perform a specific task.

BIOS: Basic Input/Output System. Programs that are permanently stored ithe system board's ROM chips providing functions such as the power-on self test. Also see ROM.

Boot: To start the computer system and load the operating system.

Bus: The set of address or data lines used to transfer information between different components within a computer (such as memory, the microprocessor, and the expansion slots).

Cache: Provides fast, local storage for frequently accessed instructions and data to provide the processor with the fastest stream of information possible, while keeping main memory current.

Clock: A circuit that sends a consistent, periodic signal used to synchronize the computer and to step information through the system.

Closed: A circuit that is complete. Usually accomplished by placing a jumper over two pins on the system board or a peripheral card. Also see "Open" and "Jumper."

CMOS: Complementary Metal Oxide Semiconductor. A logic circuit family that uses very little power. Sometimes used to store information by applying constant, uninterrupted power through the use of an external battery.

Co-processor: A microprocessor device that performs specialized computations (such as floating-point arithmetic) much more efficiently than the microprocessor alone.

CPU: Central Processing Unit. The integrated circuit chip that performs the actual computing functions of the computer. Other chips perform support functions like storing data and controlling peripherals. Also see microprocessor.

Disk: See "Floppy Disk" and "Hard Disk."

DMA: Direct Memory Access. A method for transferring data directly to and from system memory, bypassing the microprocessor.

DOS: See "Operating System."

DRAM: Dynamic Random Access Memory. Memory that requires a periodic refresh cycle to keep the stored information from being lost. Loss of power causes loss of data in this memory.

EISA: Extended Industry Standard Architecture.

Expansion Slot: A connector on the motherboard for holding a peripheral card.

Floppy Disk: A 3.5 inch or 5.25 inch removable storage medium used for storing programs and files externally from the computer system.

Format: A process that prepares a disk to hold data. For hard disks, there are two formatting process: low-level and high-level.

Hard Disk: An internal or external, high-capacity, high-storage medium.

Hertz (Hz): A unit of frequency equal to one cycle per second.

I/O Port: A connector that allows external and some internal peripherals to communicate with the computer system (e.g., serial ports and parallel ports).

I/O: Input/Output. A generic term that refers to the devices and processes involved in the computer's reading and writing data.

IDE: Integrated Drive Electronics. Currently the most popular type of hard drive used in PCs. A standard IDE adapter can handle a maximum of two hard drives.

Integrated Circuit: An electronic device that combines thousands of transistors on a small chip of silicon or other semiconductor. Such devices are the building blocks of computers.

Interface: The connection between the computer and its human operator, or between the computer and peripheral device.

ISA: Industry Standard Architecture. The standard bus interface that was implemented in the IBM AT.

Jumper: On a printed circuit board, a patch cable or wire used to establish a circuit.

LBA: Logical Block Addressing. Allows the system to address more than 528MB on the hard drive.

Megahertz (MHz): A frequency of 1 million cycles per second.

Memory: Devices used to hold information and programs while they are being accessed by the microprocessor. See also RAM and ROM.

Microprocessor: An integrated circuit that contains the circuits the computer needs to calculate and to communicate with the other parts of the system. See also CPU.

Modem: A device designed to allow computers to communicate over standard phone lines.

Motherboard: See "System Board."

Non-Volatile Memory: Memory that is maintained even when power is not on.

On-Board Floppy: A floppy disk drive controller that is incorporated into the system board.

Open: A circuit that is not complete. Usually accomplished by removing a jumper from two pins on the system board or a peripheral card. Also see "Closed" and "Jumper."

Operating System: The software the provides a link between application programs and the computer hardware (e.g., disks, memory).

PCI: Peripheral Component Interface. A form of local bus architecture that provides high-speed interconnection without directly interfacing with the processor.

Page Mode: Special function in DRAM that saves up to about 30% in cycle time by not re-loading RAS bits.

Page: Sections of memory consisting of sets of consecutive bytes. Pages begin on 4-KB boundaries.

Peripheral Card: A printed circuit board that gives the computer added capability, such as more memory or control of a new device. A card plugs into one of the expansion slots located on the system board.

Peripheral: Any device that is connected to the computer system (e.g., printers, keyboard, plotters, etc.).

Pin: Any of the leads on a device, such as an integrated circuit, that plug into a socket and connect to a system.

POST (Power On Self Test): Check-out procedures that the BIOS runs automatically when the system is turned on. These procedures verify that all computer hardware is functioning properly. If the test detects problems, the computer displays error codes before (or instead of) starting the operating system. The error codes can help a service person determine what is wrong with the computer.

Program: A set of instructions that a computer interprets to perform some task. Also see "Application" and "Operating System."

RAM: Random-Access Memory. The type of computer memory that can be used to store information while a program is running. RAM consists of a number of small integrated circuits that are plugged into the system board or an external memory card.

ROM: Read-Only Memory. The type of computer memory that is used to permanently store the information vital to computer operation, including some parts of the operating system. ROM is permanent and the contents will not be lost when the computer is turned off.

Setup Program: Used to inform the computer about installed peripheral, memory, configuration information, date and time, etc.

Shadow RAM: A method of copying BIOS routines from slower ROM chips to much faster RAM, increasing system performance.

SIMM: Single In-line Memory Module. A small circuit board containing memory components that plugs into special sockets located on the system board for upgrading the system memory. These modules generally need to be inserted in groups of two or four.

Software: A general term that describes a program or set of programs.

SRAM: Static Random Access Memory. Does not require periodic refreshing that dynamic memory requires.

System Board: The large printed-circuit board in a computer on which most electronic devices are mounted; the primary board in a computer. All other interfaces receive control signals or information from the motherboard. Also commonly referred to as the "mainboard" or "motherboard."

System Unit: The description for the computer case and all internal components (e.g., the system board, expansion cards, disk drives, power supply, etc.).

System: The assembly of basic components (e.g., power supply, motherboard, memory, video monitor, etc.) united by some form of communication to form an organized whole.

VESA: Video Electronics Standard Association. A group of standards developed for the purpose of defining video resolutions greater than VGA.

VGA: Video Graphics Array. The most widely accepted graphics hardware standard and the lowest common denominator for all graphics cards and monitors manufactured to date.

Wait State: A delay in the computer's information processing cycle caused by a difference in speed between a faster processor and slower memory. A 0-wait state means the processor does not have to "wait" for memory, and can access data as fast as needed.

Write Precompensation: In a hard disk, the varying of the timing of the read/write head current on the inner tracks of the disk to maintain a constant signal.

Installing Sound Device Drivers

This explains how to install the sound drivers necessary to utilize the onboard sound support. Prior to installing any drivers, follow the instructions on how to install a CD-ROM drive and how to connect external sound devices.

About Device Drivers

Device drivers are necessary for the computer system to communicate with devices such as CD-ROM drives, sound controllers, graphics adapters or devices that are not natively supported by the system BIOS. Once started, device drivers remain active in the background of the computer system. Usually a device driver is added to the CONFIG.SYS file, the AUTOEXEC.BAT file or both.

WARNING:

This installation procedure should only be used if your hard drive has been re-formatted. These drivers have been installed at the factory and do not need to be reinstalled on a new system.

Installing the Sound Drivers

Once you have connected your external sound devices, you can install the sound drivers. If you are installing a CD-ROM drive, it is recommended you install it before setting up the sound devices.

1. If you previously installed another sound card, remove it and all associated files from your AUTOEXEC.BAT and CONFIG.SYS files.

2. Start your computer system.

3. Insert the sound driver disk into your floppy drive.

4. From the DOS prompt (C:\), type: A:\INSTALL

5. Follow the on-screen instructions and the installation program will automatically copy the drivers to your hard drive.

6. Once the software is copied, the install program automatically updates your CONFIG.SYS and AUTOEXEC.BAT files.